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Economic Life in Ancient India

A SYSTEMATIC SURVEY

[A thesis prepared as Springer Research Scholar,
the University of Bombay]



BY

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Printed at the Arya Sudharak Press, Raopura, Baroda by M. M.
Gupta for M. A. Buch, Baroda. 1-4-24.

PREFACE

A preface means a personal explanation.

I have here ventured to give an account of one of the most important of the many-sided activities of the public life of our interesting ancestors who have left us valuable records in the shape of our sacred literature. The period under survey is that beginning with the Rigveda and ending roughly with the age of Asoka. The most important sources of our information are the Vedas: the Brahmanas: the Upanishads: the Sutras: the Dharma-shastras: the Ramayana and the Mahabharata; the Sacred Books of the East series in the Buddhist literature; the Jatakas; Shukraniti, Arthashastra and evidence of foreign writers. These are the main documents which supply a large part of the data which enable us to reconstruct some type of rough picture of ancient Aryan life. An amount of literature has also grown up regarding this particular branch of Indology; and 'economic life' has been attacked piecemeal by a number of writers. The giant Western scholars like Heeren, Lassen,

Buhler are the pioneers; and in India scholars like Dr. Mookerji; Prof. Rawlinson, Dr. Majumdar, Dr. Benoy Kumar Sarkar, Dr. Narendranath Law, Dr. Bhandarkar of the Calcutta University, have done very valuable work towards building up a systematic knowledge of many sides of our ancient economic life. The work of Prof. Rhys David and Mrs. Rhys David is too important to be passed over. To all these I am indebted not only for obligations acknowledged in notes; but also for those not so explicitly acknowledged. I am also indebted to writers on Hindu Law like Dr. Sen, Dr. Ghosh and others, to Prof. Roy for his valuable article on Indian Banking; to Prof. Coyajee for his article on ancient Indian commerce; to Prof. Praffulchandra for his article on Vedic Agriculture; to Dr. Balkrishna for his article on Ancient Indian Economics; to Dr. Mac Donnell and Dr. Keith and to Mr. Iyer for their very learned works on the Vedic life; and above all, to Sir George Birdwood and Dr. Coomarswamy for their beautiful appreciations of Indian arts. I have extensively exploited the learned work of all these writers; but what was still necessary was the work of synthesis. Economic life of Ancient India still is not studied as a whole by any writer; and the first step towards breathing new life into the dry bones of

ancient materials from this point of view is to bring into intelligent connection the facts as found in ancient writings, and worked into some sort of system by these writers. I intend here to attempt the very modest task of drawing a connected picture of ancient economic life of our people as a whole. This was considered a desideratum very early by the learned writers of the volumes on Indo-Aryan Research; and by Dr Rhys David in the work on "Buddhist India". Recently however attention is drawn towards the importance of this subject by Prof. Sammadar and others; and we will see a number of contributions on it. But as we are not at all losers in having nearly a dozen books on Ancient Indian Polity; so also we will be only gainers by the concentration of public attention on this aspect of Indology. Economic life of Ancient India is a vast subject; it will have to be attacked by at least a dozen competent scholars, before we hope to hear the last word on the subject. My humble contribution is a call to earnest workers to fill up the outlines thus drawn and to extend the knowledge of the subject as far as possible. Descriptive economics has a less pretentious role to play than constructive economics yet it is indispensable for a proper insight into the universal truths of economic science that we should

have before us systematic accounts of the economic life of all peoples in their various stages of civilisation, and by comparison and contrast we will be able to take up a correct standpoint with regard to all problems. Thus to me it appears that whether we look at the subject from the standpoint of Indology, or from the viewpoint of Indian History, or from the point of view of economic science, or from a sociological standpoint this subject has immense interest for us; and I hope that this humble effort at collation and systematisation of details regarding this subject of central importance will not be entirely without value for the public in general and the scholars in particular.

It is our business to see Indian culture from all points of view, and to get at a critical and correct appreciation of its worth and limitations from the standpoint of world-culture; and to this end we welcome so cordially every serious attempt in this direction. One of the many illusions regarding our past viz. that we were purely a religious and philosophical people, and mere ciphers in other spheres of life is now substantially shaken, if not already exploded by the brilliant writings of our savants on ancient India; and this little publication will also, I trust, enable us to

appreciate our secular culture a little better than is usually done. Agriculture, commerce, and arts, were all well developed; and India could maintain a healthy attitude of moderation between one-sided extremes of a purely agricultural or a purely manufacturing country. The ideal of self-sufficiency on the whole dominated our economic organisation; and yet free and peaceful exchange was possible between various parts of India internally; and India and the outside world. Early commerce was interregional not international; and production was for use primarily and exchange secondarily; in this alone we found the normal attitude towards commerce. The hollowness of the other theory which is nursed into artificial life by the peculiar conditions of certain western countries viz. that production is mainly if not entirely for exchange, is so trenchantly exposed by our brilliant economist Prof. K. T. Shah. In Ancient India, it is true that custom prevailed more than competition, status more than contract; and yet was not the economic condition of people then in many ways superior to our present lot? Famines were there, long and intense; yet the sense of scarcity which we normally feel in our daily lives was conspicuous by its absence. There was usually the reign of God's plenty; the growth of the

sentiment of hospitality, of the institution of omnibus families, of the order of Sannyasis shows that people were not hard pressed, year in and year out, by fundamental economic needs, by the harrowing thought of bread and butter. Men liked their work and gladly abandoned themselves to their artistic visions and dreams, without thinking too much of markets for their goods. The law of demand and supply was operative then as now, yet its unchecked operation was not allowed to prevail. Production was usually subordinated to consumption; and the theory of consumption paid more heed to the real and fundamental needs of man, rather than his changing whims and fancies. Wants were kept within definite bounds; and the ceaseless multiplication of wants was not considered the be-all and the end-all of a civilisation. The economic ordering of society was meant to serve the fundamental physical needs of man; and these being once secured, man was free to think of higher things. Stomach always remains the centre and the driving-wheel of men's life; and yet it must be said with pride of the ancient Aryans that they found it possible to make the whole secular life of man subservient to the higher demands of spirit. The fact remains that men

knew in those days to look at life steadily and to look at it as a whole. In this lies the secret of their success.

One word more. I must here express my gratefulness specially to His Highness Shri Sayaji Rao Maharaj of Baroda and H. E. the Diwan Sahab Sir Manubhai Mehta under whose kind guidance and inspiration all my work is done. I owe special thanks to His Highness for the gracious permission he has given to dedicate this book to him. I must next tender my best thanks to the University of Bombay whose award to me of the Springer Research Scholarship has made it possible for me to prepare this work; and whose continued financial assistance I count upon in meeting the expenses of this publication which are quite staggering to me otherwise.

The book has been hurried through the Press. I wish I could have given more time to it. But neither leisure not energy permitted me to do it. The typographic errors are equally unfortunate. Particularly the passge on gems on pp 169-170 would find its appropriate place on page 189. The mistake first crept into the type-

written copy, and has survived. All that I can do is to crave for generous indulgence on the part of the public for all the shortcomings of this work. I promise a book free from these errors to the readers in case the book reaches a second edition.

M. A. Buch.

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To

HIS HIGHNESS

SHRI SAYAJI RAO,

THE MAHARAJA GAEKWAD

OF BARODA.

Senakhaskhel Sainsher Bahadur,

G. C. S. I., G. C. I. E., L. L. D.

Books which supplied the materials.

The Vedas (Griffith's work is mainly used
for reference)

The Brahmanas.

The Upanishads.

The Dharma Shastras.

The Dharma Sutras.

Ramayana.

Mahabharata.

S. B. E. Series on Buddhist Literature.

Jatakas : Cowell & Rouse.

Mc Crindle : Ancient India as described by
Classical Writers.

Artha Shastra : Dr. Shama Shastri.

Shukraniti (S. B.)

Books of vital use in other respects.

Indo - Aryans : Rajendra Mitra.

Shukra Niti : Volumes of Benoy Kumar
Sarkar.

Dr. Mukerji's History of Shipping in India.

Dr. Mukerji's Local Self - Government in Ancient India.

Dr. Coomaraswami's Arts and Crafts of India and Ceylon.

Dr. Coomaraswamy's Indian Craftsman.

Dr. Majumdar : Corporate Life in Ancient India.

Dr. Fick : Social Organization in Northern India.

Rhys Davids : Buddhist India.

Dr. Bhandarkar : Ancient Indian Numismatics.

Birdwood : Industrial Arts of India.

Articles in Journals of Royal Society, Asiatic Researches, Indian Antiquary, Modern Review, Journal of Indian Economics.

Sen's Principles of Hindu Jurisprudence.

Law : Studies in Hindu Polity.

Vedic Index.

Life in the age of the Mantras : Iyer.

Prof. Rawlinson's India and the Western world.

Abbreviations

Rg. Rigveda.

Av. Atharvaveda.

Sh. Br. Shatapatha Brahmana.

- Ai. Br. Aitareya.
 Ch. Up. Chhandogya.
 Brih. : Brihaspati.
 Nar. : Narada.
 Gau : Gautama.
 Apa : Apastamba.
 Vas : Vasishtha.
 Yaj : Yajnavalkya.
 Shanti : Sabha, Anu : (Anushasan)
 Vana etc. Parvas.
 Mahav : Mahavagga.
 Kull ; Kullavagga.
 Sadh. P. : Sadharma Pundarika.
 Vin : Vinaya Texts.
 Jat : Jatakas.
 S. N. Shukra Niti.
 I. A. : Indian Antiquary.
 J. R. A. S : Journal of Royal Asiatic Society.
 Quest : Questions of King Milinda.
-

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Economic Life in Ancient India.

I. Economic Science in Ancient India.

I

1. Was there Economics in Ancient India ?

The question is : ~~was~~ there any speculation on economic matters among early Aryans ? Did the ~~early~~ writers discuss economic questions with anything like impartiality and detachment ? How far was this speculation a mere mass of unconnected sayings, and how far was it a body of scientific thoughts ? The answer to these questions will be given by the book as a whole. Economics as a science as we now understand it is evidently a modern science. Its foundations were laid by men like Say and Adam Smith in the eighteenth century in Europe. But speculation on economic problems must go back to the earliest ages. All life is bound to be, in its broad aspects, determined by fundamental economic facts. Production, Distribution, Exchange, and Consumption may be new categories,

but they are undoubtedly old facts. Earliest economic life of all peoples, therefore, was bound to give rise to some speculation regarding it, however crude or fragmentary it might appear to us. Economic science is a modern growth, but economic life and economic thought must be and are very ancient facts, - everywhere, in Greece, Rome, India.

It will be best to begin by giving views of Western historians of economics on the position and worth of economic thought of ancient India. This will enable us to see ourselves as others see us.

2. Views of European Writers.

(a) Cossa : The economic ideas of ancient peoples of the East have a slight interest from the point of view of modern science. They can all be reduced to a few moral precepts about the virtues of temperance, industry, and economy, and about the duty of desiring wealth only for the purpose of worship and charity. Commerce and arts were despised : and the division of labour ran to seed. ¹

(b) Ingram : Conservation is the principal task of this social order ; and its most remarkable quality is stability, which tends

to degenerate into stagnation. Yet useful arts were progressive under this regime. The moral side of economics or the economic side of morals is one which the ancient thinkers of India habitually contemplate, . They insist on honesty, diligence, thrift, charity, and such other virtues. There is a tendency to prescribe in detail the time, the mode, and the accompaniments of almost every act of every member of community. ²

- (c) Haney : In its simplest form, economic thought must always have existed whenever thinking beings sought to gain a living. Economic ideas of any definiteness find their earliest expression, however, in rules of conduct or moral codes formulated by priests or lawgivers. Economic precepts are therefore presented with ethics and religion as a whole.

1. Reasons for the tardy development of important economic ideas among the ancients :

- (a) Subjective : The first subjective or psychological cause is the tendency

of the ancient thinkers to look down upon physical wants. It was considered godlike to have as few wants as possible. Hence under the circumstances, the development of a science which deals with the satisfaction of wants is difficult.

This disregard for material considerations is a concomitant of the dominance of ethical ideas. The ideas of the ancient people about right and wrong on the one hand, and economic advantage and disadvantage on the other hand were inseparable.

Part and parcel of this subjective attitude is the fact that some of the interests most conducive to economic study were especially deprecated. The earliest desire to better the condition of the labouring classes is one of the most fruitful sources of economic study. But, in general, pagan philosophy teaches that industry is degrading to body and intellect.

The omnipotence of the State in antiquity, and the ascendancy of the purely political interests are other factors retarding the development of economic thought. The importance of individual must be adequately recognized before economics can flourish.

The idea of the ancients to gain wealth by conquest and forced labour is another factor tending in the same direction.

- (b) Objective : Economic phenomena were deficient both in number and in weight, that is, absolutely and relatively. The subject-matter of economics, as a social science, is human relations. Now this great complex of relations - between individuals or states - did not exist in the past to anything like the same extent that it now does. More concretely, division of labour was not carried very far. An independent domestic economy means a

large degree of economic isolation. Practical politics, war, religious activities filled a large part of men's lives. There was little security of person and property.

2. Oriental economic thought : The central development of government and education was the fulfilment of the law. Among the ancient Hindus, interest was closely connected with some concept of a just price. All regulations regarding commercial matters point towards an underlying conception of a just price. There was no labour problem in the modern sense.

3. Characteristics of the social Philosophy of the East :

1. Simplicity was the most salient characteristic of the social philosophy of the Orientals. They conceived of life as a whole and not in compartments. Social life, and hence social sciences were undifferentiated. Religion, law, ethics, economics, philosophy were inextricably blended together.

2. In this aggregate of social concepts, the dominant member was religious or moral. The rules of the Brahmanic or Mosaic codes which bore upon economic matters had a religious significance : by following them, one gained primarily not economic well-being, but a right life, a clear conscience, or spiritual perfection.
3. A characteristic of the situation was the minute regulation of everyday life. Many institutions which were primarily economic were regulated.
4. There was a conflict in economic thought between economic stimuli and ethico-religious ideas. The philosophy of the Orient was characterized by such a lack of individualism and materialism, such a disapprobation of industry other than agriculture, such a degree of passivity and fatalism, that its dominance made any great industrial civilization impossible. ³

3. Hindu attitude towards wealth : Economics and Ethics.

A Hindu is often a puzzle and a paradox to other nations. His attitude towards the transcendental problems marks him out as a philosopher ; and one therefore jumps to the conclusion that in this world of matter-of-fact reality, he is not at home. But this is only a half truth which is a whole error. The fact is that the Hindu believes in a hierarchy of goods, in a gradation of values. There are two spheres of activity - Vyavaharika and the Paramarthika. There are four ends of human existence - Dharma, Artha, Kama and Moksha. The moral and religious, the economic and aesthetic values are ends in this worldly life - the life of Vyavahara, of pravritti. But the latter takes a man to the paramarthika stage - where a certain negation of earthly goods, a certain transvaluation of values takes place. But the standard controversy in Hindu sacred writings relates to the rival excellencies of the three types of goods, religious and moral, hedonistic, and economic.

A glance at history will show that Hindu view was at first purely affirmative, then it was

purely negative, and then it was gradually crystallised into a higher synthesis which combined both the above views. In the early Vedic period, there is no conflict. The cry is - more pleasure, more dharma, more wealth. It was nowhere suggested that there was any sin in pleasures or in wealth. The attitude towards all the goods of life was purely naturalistic. The prayer is : " Bring us a thousand (cows), hundreds of kine, O Hero, bring cattle, bring us ornament, bring us, embellishment and steeds, give us besides, two rings of gold. " ⁴ Or ; " for goodly fields, for pleasant homes, for wealth we sacrifice to thee. " ⁵

Later in the Upanishads we notice the growth of the opposite sentiment. " Not by wealth is there any hope of immortality. " In the Mahabharata wealth is reduced to its proper position of a means to an end. It was now clear to the ancient thinkers that wealth does play a great part in the building up of civilisation, and that property is often the essence of our personality. Here is the tie connecting ethics and economics. " One who robs another of wealth robs him of his virtue as well. Poverty is a state of sinfulness. From wealth spring all religious acts, all pleasures, and heaven itself. Without wealth a man cannot find

the very means of sustaining his life." ⁶ " Agriculture, trade, keeping of cattle, and diverse kinds of acts constitute what is called Artha. Artha or wealth, again, is the end of all acts. Without wealth both virtue and happiness cannot be won. "

Yet ancient Aryan culture was essentially religious, spiritual. It was धर्मप्रधान, - not Artha Pradhan. Its keynote was Dharma not Artha. Wealth was held to be purely an instrumental good. It was a mere means to an end. Whenever therefore there was a conflict between two goods - the ethical and the economic - the former must yield to the latter. " He that pursueth wealth too much without looking to virtue and enjoyment, deserves to be censured and slain by all means. " Ancient Hindu economics therefore never for a moment surrendered itself to the conviction that man was merely a money-making animal. A broader, truer, and more comprehensive view was taken of man and his capacities. Western economics in its early career lost sight of fundamental facts. Ricardo's extreme assertions regarding the paramountcy of producer's goods over the producers themselves provoked the retort of Sismondi, " What ! is wealth then everything ? Are men absolutely nothing ? " This standpoint which would sacrifice the *personality* of men

to the *products* which he is helpful in creating was the bane of early Western economics. It raised powerful protests from men like Carlyle and Ruskin. It is only during last few years that a proper view is gradually approached, which essentially emphasises the human values of all things. Our ancient thinkers had no illusions in this matter. Man's existence can never be summed up in terms of his output, in terms of his income. We can do justice to it if we speak of him in terms of feeling, of life. This is the reading of the early Hindu writers. "अर्थशास्त्रात्तु बलवद्दर्शशास्त्रमिति स्थितिः" When the dicta of economics and ethics conflict, when the voice of earthly gain leads one way, and the voice of duty the other way, the latter must unequivocally decide the situation.⁷ Man is fundamentally a spiritual being, - with an instinct not merely for pleasure and pain, but for the eternally valuable as well as the transiently useful, - and only incidentally an economic being. Marxian conception of history is not the only one possible : and it is certainly not an accurate reading of the whole history of man. However, wealth was clearly taken as *a good*, though not *the good*. With the realisation of the importance of wealth in social economy, the science of economics becomes possible.

4. The concept of Vartta :

The word Vartta comes from Vritti i. e. profession or means of livelihood. Vartta meant at first three professions : agriculture, cattle-rearing, and trade.⁸ To these was added, lending money at interest. It is thus clear that Vartta was a province for the Vaishya whose functions are described chiefly as कृषि-गोरक्ष-वाणिज्य-कुसीद.⁹ Kautilya, however, makes Vartta the occupation of the Shudras also, adding to it Karukushilavakarma (professions of artisans and bards).¹⁰ The Devi Purana adds Karmanta i. e. manufactures, to the subdivisions of Vartta ;¹¹ and with this step we may take it that Vartta becomes co-extensive with modern economic science, dealing with production, distribution, and exchange of wealth. A concrete idea of the scope of Vartta can be gathered from Manu's description of the functions of the Vaishya; agriculture, cattle-rearing, apprising the prices and qualities of gems, pearls, corals, metals, woven stuff, scented things and salts ; knowledge of sowing seeds, of specific traits of the soil, of the measures of the land, of the rules of weighing articles, the good and evil traits of countries; profits and losses in manufactured articles; the wages of artisans and workmen ; the languages of different peoples, the rise and fall of prices; the modes of selling and buying.¹²

5. The Place of Vartta In Social Economy.

It is evident that this science occupied an important place in ancient studies. Narada's question to Yudhiathira shows that really competent persons were to be placed in charge of the various departments coming under the title of Vartta. The king was expected to be master of economics; and the prince was therefore placed under government superintendents for a thorough-going course of instruction, theoretical and practical, in the science of Vartta.¹³ The Brahmins were the usual teachers of Vartta; and the Shudras too were such great experts in the various branches of it, that even the Brahmins often went to school to them for a training in arts.¹⁴

6. Vartta and Arthashastra :

A science equally ancient and more universal in scope than Vartta, was Arthashastra. Shukra defines the latter as the science which describes the actions and administrations of kings, as well as the means of livelihood in a proper manner.¹⁵ Kautilya describes it as the science which treats of the means of acquiring and maintaining the earth.¹⁶ In the light of this science one can set on foot righteous, economical, and aesthetical acts and maintain them.

Vartta refers to economic science as well as economic arts ; but it is sharply distinguished from politics as well as public law, both of which are dealt with in the Arthashastra along with economics. ¹⁷

7. The Place of Vartta among Sciences : Vartta and Dandaniti.

One school would place all sciences under Dandaniti or politics. Another would admit only two sciences : Vartta and Dandaniti. But Kautilya will have : Metaphysics, the Vedas, Vartta, and Dandaniti.

Thus there is first the *philosophia prima* or metaphysics : and then there are the three sciences : of ethics (the three Vedas), which teaches the distinction between right and wrong ; of economics, which teaches the distinction between wealth and non - wealth, and of politics which teaches the distinction between efficiency and inefficiency, between the expedient and inexpedient. ¹⁸

8. Exact nature of economic thought.

It is however not to be supposed that we had anything like a full - fledged economic science. In the very nature of things ancient thought must differ from modern, not only in its content but also in its mode of presentation. It was the same in

the science of ethics. The ancient writings contained in germ the true theory in the matter. Yet we were far from the systematic presentation and formulation of ethical thought such as we have to-day in Mill and Spencer, in Sidgwick and Rashdall. In the same way in economics we cannot expect any approach to Mill and Nicholson, Marshall and Taussig among the ancient writers on Vartta. On the whole, the manner of presentation was concrete. The aim of Vartta was severely practical; its business was to guide the trader, the agriculturist, the cattle-trainer, the artisan, the director of industries, the statesman, the teacher, the cultivator. Hence Vartta was cultivated not as a single science but a body of different studies; and the aim kept in view was not so much theoretical instruction, as practical mastery. ¹⁹

II. Rural Economics : Pastoral and Agricultural Organization.

I

If we cast a glance at the earliest economic organization anywhere, we will assuredly find that it was predominantly rural. All civilization has its roots in the village. The village therefore is the fundamental economic and social unit of early Aryan society. Even now it remains to a very great extent the unit of Indian economic society. But in the very earliest epochs of civilization it was bound to be so to a far greater extent. Our economic study of India therefore must begin with the grama or village community.

1. What is a Village ?

Its connotation in India is to some extent peculiar. In Europe it often means a group of buildings. In India the village includes the group of houses as well as the surrounding lands. India was at that time, split up into numerous separate and distinct groups of holdings, covering from about a few hundred to a few thousand acres. These groups of holdings were the earliest organization for the cultivation of the level plains of India.

But the village was not merely a territorial but an essentially human unit. It meant a body of men connected by close ties with one another. These would naturally become a single, self-sufficient whole. This small community, primarily brought together by fundamental economic and social needs, soon develops its own little civilization, embracing all its primitive wants and requirements. Like Plato's imaginary city, the village will soon cease to be a purely homogeneous and undifferentiated community of peasants but will add to its agricultural activities a good many others auxiliary to them, thus rounding off effectively its economic life. A host of professions springs up - those of the potter, the blacksmith, the carpenter, the cobbler, the washerman, the sweeper, the cattle-keeper and the barber. These workers soon settle down in the villages and are allowed a share of grain and perhaps cash or are granted rent-free land which they cultivate.

The village also requires its own humble political organisation to meet its pressing political necessities. Wherever a few men gather together, the government springs up. The village headman therefore very early makes his appearance. But in other villages where the landowning body is compo-

sed of a dominant class, holding the lands jointly or in shares, village affairs are controlled by a council of elders, heads of the cosharing householders.

Thus there are two leading types of villages. The one is known as the Severalty or *Raiyatwari* village. It has a special headman to look after its affairs. Its holdings are entirely separate, and not shares of a unit estate. There is no joint liability for revenue ; each holding is separately assessed on its own merits. And there is no jointly owned area of ' waste ' or common land ; it belongs to the State, not to the village. It is this type of village we meet with in the Manu Smriti and the Mahabharata. It is " perhaps the earliest organised form of permanent agricultural village in India." Contrasted with this, there is the joint - village. Here the affairs are in the charge not of a headman, but a Panchayat. The holdings (sometimes joint) are shares of a unit estate. The dominant class sometimes cultivate their own estates, but more often have a body of tenants under them. Very often the cultivated land is divided, and the waste left in common. This waste is the joint property of the whole village and is available for partition. There is, lastly, the liability (joint and several) for the revenue assessed in a lump sum. ¹

2. The Origin of Village Community.

It is idle to look for elaborate explanations regarding the origin of the village. The origins of all society may be found in the fundamental economic and social needs driving people to some form of permanent union. This union is very often a moving one, as long as life remains purely nomadic. The nation then is the moving horde. But when the early Aryan people developed some form of agriculture, they found it necessary to settle down in some fixed places. These holdings which they formed in a more or less compact village form were thus "a necessity of permanent agricultural establishment, under the Indian conditions of Indian life, both physical and social."

The village is the result therefore in the first place of agricultural necessities. But above all, people always organise themselves for mutual defence against all kinds of hostile forces. Men would badly need protection against the lions, the tigers, and the wolves of the jungle, as well as the fierce and hostile tribes which surround them. Soon other needs arise which go to strengthen the union thus begun. The village therefore soon becomes an

isolated, self - sufficing unit, and utilised as such for revenue purposes by the central power.

But we also hear of instances in which village organization was not the spontaneous outcome of a particular set of social conditions, but the result of a deliberate activity on the part of the State. "Either by inducing foreigners to immigrate or by causing the thickly - populated centres of his own kingdom to send forth the excessive population, the king may construct villages either on new sites, or on old ruins. Villages consisting of each of not less than a hundred families and of not more than five - hundred families of agricultural people of Shudra caste, with boundaries extending as far as a krosha (2250 yds) or two, and capable of protecting each other shall be formed. " ² Another instance of the king taking the initiative in the formation of a village community is to be found in the South Indian Inscription of the thirteenth century A. D. ³ Sufficient land was purchased for the village site, which was to contain room for the erection of a temple, and for the housesites of 108 Brahmins, of the village servants, and of the men in charge of the village library. The lands were bought from the old titleholders and tenants with all the benefits and

appurtenances that belonged to them; and these were transferred to the new settlers. A right of way was secured over certain lands outside the village for the Brahmins to walk to the tank for the performance of the daily prayers. Land was also provided for grazing cattle, for the maintenance of the families of the new settlers, each of whom appears to have received a definite piece of land, and for the remuneration of the village officers and artisans.

3. The Village in the Vedic Period.

The word *grama* stood originally for "village."⁴ Often the villages were built in close juxtaposition to each other.⁵ "The villages lying in the eastern direction, become largely populated, whilst all that is in the western direction becomes a long tract of deserts."⁶ Often they lay apart from each other, and were connected by roads. "As a main road with a village at each end, meets both this and that, so do the rays of the sun meet both this region and that."⁷ Villages were regarded as seats of quiet, ordered, harmonious life, and were contrasted as such with forests with all their wild vegetable and animal life.⁸ Cattle also found a comfortable shelter there as much as men. "As warriors to their steeds, kine to their village, as

fond milk - giving cows approach their youngling. "Mahagramah or large villages are referred to. ¹⁰

The word grama also stood for a "body of men." ¹¹ It must have stood intermediate between the kula or family on the one hand, and the tribe or vish on the other. The grama, was therefore an aggregation of families.

The head of the village was the Grama-ni. ¹² He was one of the Ratnins or jewels of the royal household. ¹³ The post was an object of special ambition to the Vaishyas. ¹⁴ It does not appear that he was an elected official from his connection with the royal establishment. However the gramani had a voice in the election of the king. "The metres act as attendants about him (Soma); even as the non-royal king-makers, the heralds (Sutas) and headmen (Gramani) (attend upon) the king, so do the metres act as attendants about him (Soma)." ¹⁵

It is probable that the villages developed a substantial amount of democratic life. The villagers met together to decide their own affairs in their local assembly called Sabha. It was presided over possibly by the village headman. It was a place where the rich and the poor joined hands. "O Indra,

thy friend is beautiful; and rich in horses, chariots, and cows. He is always provided with excellent food; majestically he goes to the Sabha." ¹⁶ Many affairs were discussed there, one of which referred to cows. "O ye cows, loudly is your excellence talked about in the Sabha." ¹⁷

4. The Village in the Pali literature.

Rhys Davids ascribes the divergence in the village arrangements to the fact that there were few tribes and clans, compared with the vastness of the country. Hence there was ample opportunity for independent growth, and for the interaction of peaceful contact. India was preeminently a land of villages. A king of Videha is described in the Jatakas, as renouncing both his capital, the city of Mithila, seven yojanas in circumference, and his realm of sixteen thousand gamas. A gama was an inhabited settlement, not regularly fortified as a city, nor containing the king's palace. The number of families in a village ranged from 30 to 1000. ¹⁸ The houses in a village stood near each other. Just near the village was the sacred grove of trees. The village was surrounded by extensive fields, very often rice-fields. There was a special plot of ground reserved for the pasture of cattle, and

another uncultivated piece in the adjoining jungle was set apart for purposes of waste and wood. Over these plots all the villages had common rights. The herdsman was in charge of the cattle of the village. He is described as " knowing the general appearance of each one of his charge and the marks upon it, skilled to remove the flies' eggs from their hide and to make sores heal over, accustomed to keep a good fire going with smoke to keep the gnats away, knowing where the fords are and the drinking places, clever in choosing pasture, leaving milk in the udders, and with a proper respect for the leaders of the herd. " ¹⁹

The most important personage in the village was the headman. It is possible that he was a hereditary official, or that he was elected by the people in their council. In later law-books, of course we find that he was regularly appointed by the central government.²⁰ He was the fiscal agent of the supreme government, charged with the collection of the village dues. We are told how he settled quarrels of the villagers and exacted fines from the guilty; how he issued prohibitions against the slaughter of animals, and the sale of intoxicating liquors, and how he promised meat to the villagers when

crops failed.²¹ "At that time all the grain had been carried away during the rainy season, and there was a famine. But it was the time when the corn had just sprouted; and all the villagers came together, and besought help of their headman, saying, 'two months from now, when we have harvested the grain, we will pay you in kind'; so they got an old ox from him. and ate it."²²

The villagers therefore lived a happy, contented life. But above all, the villagers managed their own affairs. They used to unite to build mote-halls, and rest-houses, and reservoirs, to mend the roads between their own and adjacent villages, and even to lay out parks. Even women were proud to take part in such affairs of public importance.²³ To summarise "None of the householders could have been what would now be called rich. On the other hand, there was a sufficiency for their simple needs, there was security, there was independence. There were no landlords and no paupers. There was little if any crime. What crime there was in the country was nearly all outside the villages. When the central power was strong enough as it usually was, to put down dacoity, the people, to quote

the quaint words of an old Suttanta, 'pleased with one another and happy, dancing their children in their hands, dwelt in open doors.'²⁴

5. The Village in the Law-Books.

The village is regarded as the smallest unit in the political fabric in Manu as well other law-books. The king shall "appoint a headman of each village, a headman over ten villages, a headman over hundred villages, and a headman over a thousand villages. The governor of the village shall try all cases of offence occurring therein."²⁵ All persons who violate their compacts with their caste-guilds or village assemblies are to be banished from the realm by the king.²⁶ The fact of the collective responsibility of the villagers is proved by a number of cases. "The king shall punish *that village* where Brahmins, unobservant of their sacred duties and ignorant of the Veda, subsist by begging; for it feeds robbers."²⁷

6. The Village in the Arthashastra.

The kingdom was to be divided into four districts and these into villages. The villages were graded as those of first, middle, and lowest rank. Some villages were exempted from taxation; some supplied soldiers; some paid their

taxes in the form of grains, cattle, gold, and of raw material; some supplied free labour and dairy produce in lieu of taxes.²⁸ The authority of the headman is clearly recognised. "When the headman of a village has to travel on account of any business of the whole village, the villagers shall by turn accompany him. Those who cannot do this shall pay $1\frac{1}{2}$ panas for every yojana. If the headman of a village sends out of the village any person except a thief or an adulterer, he shall be punished with a fine of 24 panas, and the villagers with the first amercement (for doing the same.)"²⁹ This passage clearly implies that the headman had to work on behalf of the whole village, and had at his disposal the assistance of the villagers whenever necessary. He could expel a person from the village and punish offenders. Nor was his power absolute; for he was punished along with the villagers who might have shared his responsibility, by a higher authority, in case of a failure of justice. "Those who, with their united efforts construct on roads buildings of any kind beneficial to the whole country and who not only adorn their villages, but also keep watch on them shall be shown favourable concessions by the king."³⁰ Elders among the villagers are

to improve and develop the property of the bereaved minors, till the latter attain their age; as also the property of gods. "No ascetic other than a Vanprastha, no company other than the one of local birth, and no guilds of any kind other than local co-operative guilds shall find entrance into the villages of the kingdom. Nor shall there be in villages, buildings intended for sports and plays. Nor, in view of procuring money, free labour, commodities, grains, and liquids in plenty, shall actors, dancers, singers, drummers, buffoons, and bards make any disturbance to the work of the villagers, for helpless villagers are always dependent and bent upon their fields."³¹

II.

1. Cattlebreeding and Live Stock: the Vedic period.

One of the most important branches of economic life of early Aryan villages was cattlebreeding. Opinion is divided as to whether the pastoral or the agricultural life occupied more attention of the Vedic Aryans. Yet we believe that there is a greater abundance of references

to the pastoral life in the Rigveda than to agriculture. This is also the opinion of Mac Don-
cker. " Among the Aryans of those days more
attention must have been given to the breeding
of cattle than to the cultivation of the field. A
great number of similes and metaphors in the
hymns of the Veda show that the Aryans must
have lived long with their flocks, and that they
stood to them in relations of the closest famili-
arity. The daughter is the milk-maid (duhitar),
the consort of the prince is in even later poems
the buffalo-cow (mahishi), the prince is at times
the cowherd or protector of cows (gopa). the
assembly of the tribe and the fold which enclo-
ses the cows are called by the same name (go-
shtha), and the word expressing a feud (gavi-
shthi) denotes in the first instance the desire
for cows. Similes are taken especially from cows
and horses. Besides cattle and horses, buffaloes,
sheep and goats are mentioned. The gods are
invoked to protect and feed the cows, to increase
the herds, to make the cows full of milk and
satisfy the horses, to lead the herds to good
pasture, and protect them from misfortune in the
way." ³² Agni looks on all creatures, " like a
brisk herdsman moving round his cattle." ³³ " Loud

low the milch-kine swimming in the waters." 34
 "What time the men in fury rush together for
 running streams, for pastures, and for houses." 35
 "My kine seek pasture where they will." 36 "For
 this, ye Lords of ample wealth, bring blessing
 for our herd, our kine, our progeny, and plente-
 ous food." 37 "As cows low to their calves in
 stalls." 38 "We make thee, Shatakratu, find en-
 joyment in the songs we sing, like cattle in the
 pasture lands." 39 "As the kine seek the warm
 stall." 40 "My thoughts move onward unto him,
 as kine unto their pastures move." 41 "Follow
 (Pushan) the kine of him who pours libations
 out and worship thee...Let none be lost, none
 injured, none sink in a pit, and break a limb,
 return with these all safe and sound." 42 "The
 kine have come and brought good fortune, let
 them rest in the cow-pen and be happy near us.
 Here let them stay prolific, many-coloured, and
 yield through many morns their milk for Indra...
 These are never lost, no robber ever injures them,
 no evil-minded foe attempts to harass them. The
 master of the kine lives many a year with these,
 the cows whereby he pours his gifts and serves
 the Gods. The charger with his dusty brow
 o'ertakes them not, and never to the shambles

do they take their way. These cows, the cattle of the pious worshipper roam over widespread pasture where no danger is. To me the cows seem Bhaga, they seem Indra, they seem a portion of the first-poured soma. O cows, ye fatten even the worn and wasted, and make the unlovely beautiful to look on. Prosper my house, ye with auspicious voices, your power is glorified in our assembly." ⁴³

The cow or ox (go) was one of the chief sources of wealth to the Vedic Indian. Its milk (kshira) was one of the chief articles of food. It was drunk fresh or made into butter (ghee) or curds (dadhi), or was mixed with Soma, or was used for cooking with grain (kshiraudana). Even the worn and the wasted could become fresh and beautiful by the use of milk. The cows enabled the Master of the kine to offer sacrifices to the gods and hence were an article as much of religious as economic use. Oxen were used for ploughing or drawing the wagons. Draught-oxen were castrated: the testes were crushed with claspers (sleshmana) or squeezed between press-stones.⁴⁴ The tips of the horns of oxen were sharpened,⁴⁵ and were decked with ornaments.⁴⁶

Cowherds took cows to pasture daily. On return from pasture, they were kept in stalls. The word *vraja* meant the 'feeding-ground' to which the milk-giving animals went out in the morning from the village, while the others stayed in it all day and night.⁴⁷ It also meant the cow-pen or the stall.⁴⁸ Another word was *gostha*- 'grazing ground for cows.'⁴⁹ The cows were milked thrice a day, early (*prater-doha*), in the forenoon (*samgava*), and in the evening (*sayan-doha*).⁵⁰ The shed or the enclosure in which during the heat of the day they were milked was called *Samgavini*.⁵¹ Thrice a day they were led to pasture.⁵² The cows were allowed to join their calves mostly in the evening. Marks were made on cattle to distinguish ownership.⁵³ Some cattle were called 'having the sign of the eight marked on the ear' (*ashtakarni*); others were called 'having the mark of the sickle on the ear.'⁵⁴ and so on.

Among other cattle, goats, sheep, and horses were objects of special attention. The shepherd in charge of goats and sheep was called *avi-pala*.⁵⁵ Sheep as well as kine were often captured from the enemy.⁵⁶ The ram was sometimes castrated.⁵⁷ The main utility of sheep was

in their wool. Pushan is said to weave raiment from the wool of sheep.⁵⁸ Gandkara ewes were famous for their wool. Dogs were employed in guarding cattle and houses from thieves, wolves, and tigers.⁵⁹

Horses were a special product of the Sindhu and the Saraswati.⁶⁰ They were of various colours—ruddy (aruna), dark-brown etc. They were often kept in stalls and fed there.⁶¹ But they were also allowed to go to grass.⁶² They were watered to cool them after racing.⁶³ The man in charge of them was called Ashvapala.⁶⁴

2. Cattlebreeding in the Epics and Manu.

In the Mahabharata we read that cattlebreeding was a regular profession. Sahadeva acts as a cowherd under Virata. "Under me" says he "cows multiply in number in a short time; nor does any disease appear among them. I know the marks of oxen which are fit to be prized and by smelling whose urine even a barren woman brings forth a child".⁶⁵ Similarly Nakula acted as a horsekeeper. "I know the character of horses and how to break them. I know how to correct their vices and to treat their diseases. A horse under

me shall never feel shy. In my hands, no mare is evil: what need then to speak of horses?" ⁶⁶ Narada's question shows the importance attached to the scientific rearing of animals: "Do you study the various Sutras, including the elephant-sutra, the horse-sutra, and the ratha-sutra?". The importance of kine is fully recognised. "Kine are always the root of prosperity. There is no fault in kine. Kine always afford the best food in the form of Havi, unto the deities. The sacred mantras Swaha and Vashat are always established upon kine. Kine are the chief conductresses of Sacrifice. They constitute the mouth of Sacrifice. They bear and yield excellent and strength-giving nectar". ⁶⁷ "Kine benefit human beings with milk, ghee, curds, dung, skin, bones, horns, and hair, O Bharata." ⁶⁸ The bullocks too should be normally treated with kindness. "Formerly, the deities, while tilling the earth whereon they performed a sacrifice, used the goad for striking the bullocks yoked to the plough. Hence in tilling earth for such a purpose, one may without incurring censure or sin, apply the goad to bullocks. In other acts, however, bullocks should never be struck with the goad or the whip." ⁶⁹

Manu gives some rules for the allocation of land for pastoral purposes and some instructions

for the guidance of the keepers of animals. " A strip of land to the extent of 400 cubits or to the width of three large sticks at the outskirt of a village should be set apart for pasturage; a ground of thrice as much measure should be kept reserved for the purpose at the outskirt of a town or city. "70 The keeper of an animal, made over to him for tending, shall be answerable for any injury done to it in his house during the night; but if the terms of tending be otherwise (i. e. for the day and night) the keeper is answerable for injuries done to it both in the day and night. If the animal strays out of sight, or is killed by a reptile or by falling into a pit through the wilful negligence of his duties by the keeper, the keeper is bound to make good its loss to the owner of the beast. If the beast be stolen by a gang of thieves, who have perpetrated the crime with the beat of drum, the keeper of the flock is not liable to make good its loss, if he informs the owner of the fact at the proper time and place. If a beast dies a natural death, its keeper is to cut off its ears, skin, hairs, bladder, sinews, gall-stones, or other bodily appendages which may testify to its natural death and show them to its owner. If a wolf attacks a flock and carries

away a beast in the absence of the flock-keeper he is responsible for it, but not otherwise. The cattekeeper is not responsible if the cattle graze on and destroy the crops standing on an unfenced ground, adjoining the pasture-land; the keeper will be fined if the cattle trespass on an enclosed field. No penalty exists in respect of the destruction of a crop by a cow within ten days of her parturition, or by a bull branded with the sign of a discus or trident, or by a bull, dedicated to a deity, whether attended by the cowherd or otherwise.⁷¹

3. Cattlebreeding in the Pali-literature.

The usual locality for pastures or khetts was in the neighbourhood of a village. There were pastures of herds of cattle, of goats, of herds belonging to the king or commoners. The latter used to entrust their flocks to a communal neatherd who is found penning his herds at night in sheds, or bringing them back every evening and counting them out to the several owners, varying the pasture from day to day. We are told in a passage quoted before how the herdsman knew each and every one of the animals in his charge, how he used to remove troublous insects from their bodies, how he used to keep the fire alive to drive out the gnats, and

how he was familiar with the whole locality, its fords, its drinking places, and its convenient pastures. Such was the Gopalaka.⁷²

4. Cattlebreeding and live stock in Kautilya.

We thus see that from the earliest days the importance of live stock was fully realized, and special care was taken to insure the healthy growth of cattle in India. It is impossible to overestimate the importance of cow in the social economy of Hindu life. The cow is the most indispensable source of nourishment to men of all classes in India, because of the milk, ghee, curds and other things of which it is the direct or indirect parent. Every Aryan householder used to have a cow or two in his house, whom he used to carefully protect. The kings were specially called गोब्राह्मणप्रतिपाल because they were expected to look above all to the well-being of kine and Brahmins. The ox also was a very important article and from the standpoint of agriculture indispensable. It was also immensely useful in the conduct of local transport. The horse and the elephant were more useful to the governments and the aristocracy of the land than to the masses: but they were none the less objects of special attention in those days.

It is interesting to find a special department for the welfare of cattle and animals in general in the time of Asoka and Chandragupta. Six chief officers or superintendents were appointed for running the department. (1) The Superintendent of cows; (2) the Superintendent of pastures and grazing grounds; (3) the game-keeper; (4) the Superintendent of elephants; (5) the Superintendent of forests and forest-produce and (6) the Superintendent of horses.

The Superintendent of cows had to supervise (1) herds maintained for wages, (2) herds surrendered for a fixed amount of dairy produce, (3) useless and abandoned herds, (4) herds maintained for a share in dairy produce, (5) classes of herds, (6) cattle that strayed, (7) cattle that are irrecoverably lost and (8) the amassed quantity of milk and butter.

Thus we find that the Superintendent's duties were many and various. In the first place, he had to keep a register of cattle, in which a note was taken of calves, steers, tameable ones, draught oxen, bulls that were to be trained to yoke, bulls kept for crossing cows, cattle that were fit only for the supply of flesh, buffaloes and draught buffaloes;

female calves, female steers, heifers, pregnant cows, milch cattle, barren cattle; calves that were a month or two old. It was his duty to mark all these cattle as well as those stray cattle which might have remained unclaimed for a month or two, and to register the branded marks, natural marks, colour, and the distance from one horn to another of each of the cattle.

In the second place, he had to take a special note of the missing animals. An animal was declared 'lost', when it was carried off by thieves or when it had got itself mixed up with the herds of others, or when it used to stray unknown. It was 'irrecoverably lost' when it was entangled in a quagmire or precipice, when it died of disease or old age, when it was drowned in water, when it was killed by the fall of a tree or of river bank, when it was beaten to death with a staff or stone, when it was struck by lightning, when it was carried off by a crocodile, or involved in the midst of a forest fire.

But above all the Superintendent was required to appoint the servants under himself to look after various branches of the departmental work: the linkers; churners, hunters, the cowherds. On

various terms the services of these men were engaged : (1) Some herds were placed in charge of hundred head on fixed wages. This arrangement was called वेतनप्रतिग्राहिक. This system of payment is preferred to the system of payment of the profits of milk and ghee, on the ground that under the latter system, there was a temptation to starve the calves to death. (2) Certain cowherds were, on payment of a certain fee, placed in charge of a herd of 100 head, made up of equal numbers of aged cows, milch cows, pregnant cows, heifers, and calves. The fee was some varakas of clarified butter (i e. $3\frac{3}{20}$ seers), as well as the tail and brandel-skin of dead cows. The system was called karapratikara. (3) According to the Bhagnotshrishtakam system, a share in the dairy-produce was given to the herdsman who reared a hundred heads made up of equal numbers of afflicted cattle, crippled cattle, cattle that could not be milked by any one but the accustomed person, cattle that were not easily milked and cattle that killed their own calves. (4) Under the arrangement known as Bhagnapravishtaka, cattle were kept under the Superintendent through fear of thieves, giving him $\frac{1}{10}$ th of the dairy produce.

It was also laid down that cattle should be

supplied with abundant food and water. The scale and standard of diet necessary to keep up the vigour of the animals were fixed by the Government. Thus powerful bulls were given $1\frac{1}{2}$ seer of meadowgrass, twice the above quantity of straw, $2\frac{2}{3}$ chataks of salt, besides oil, liquor, ghee, milk, curd, barley, and molasses in similar proportions. The buffaloes and camels received double the above quantity, while mules, cows, and asses received the above quantities less by one quarter each. The oxen were given as much subsistence as the work demanded from them required ; and the cows were given it in proportion to the milk they gave.

Certain rules were laid down for the grazing of cattle, for the milking of cows, and for the churning of milk. The cowherds were to look to the safety of the cattle. They were to graze the herds in forests which were severally allotted as pasture grounds for various seasons, and from which thieves, tigers, and other molesting beasts are driven away by hunters aided by their hounds. Sounding bells were to be attached to the necks of timid cattle, with a view to scare out snakes and tigers, and as a definite means of knowing the whereabouts of herds. Cattle should be grouped in herds of ten each of similar colour, while they

were being grazed. A certain proportion of cattle must be males ; thus in every herd of ten cows or buffaloes, there must be four males.

The milkers were required to milk the cattle both in the morning and in the evening, during the rainy, autumnal, and the first part of winter seasons ; and during the latter part of winter, and the whole of the spring and summer seasons, they should milk only once. The time of milking should not be allowed to lapse. The proportion of butter normally yielded by milk was fixed. One drona of a cow's milk, when churned, yields one prastha of butter ; the same quantity of a buffalo's milk yields $\frac{1}{4}$ th prastha more ; and the same quantity of milk of goats and sheep produces $\frac{1}{2}$ prastha more.

The herdsmen were fined for cruel treatment of animals. Certain animals such as a calf bull, or a milch cow were not allowed to be slaughtered. It was also a part of their duty to apply medicines to diseased animals.

Animals like goats and sheep were shorn every six months, and their wool was made over to the Superintendent.

The herdsman had to surrender the skin with the branded mark of a dead cow, buffalo, goat,

sheep, ass, or camel; also their fat, bile, marrow, teeth, hoofs, horns, and bones.

The Superintendent of Pasture lands had to open new pasture grounds between any two dangerous places; the object was the reclamation of waste lands. The same pasture grounds were not to be used throughout the year: but different forests were assigned to different seasons. In this way they could be kept up unimpaired, and their resources unexhausted by continuous use. It was for the herdsman to select a locality on considerations of the safety afforded by it and its nearness or distance.

The appointment of hunters was meant to ensure the safety of the cattle. The hunters, aided with their hounds, used to reconnoitre forests. They were to hide themselves by ascending trees or mountains in order to escape the thieves. They used to sound the note of danger by blowing conch-shells or beating drums, by flying the pigeons of the royal households, and by causing fire and smoke at successive distances.⁷³

The Superintendent of Horses had to register the breed, age, colour, marks, group or classes, and the native place of horses. The circumference of the

best horse measures 100 angulas, horses of medium and lower sizes fall short of the above measurement by five parts. The diet of the best horse was 2 dronas of any one of the grains, one prastha of oil, 50 palas of flesh, five palas of salt, 1 prastha of liquor, two prasthas of milk etc. The horses of Kamboja, Sindhu, Aratta, and Vanayu countries are the best; those of Bahlika, Pupeya, Sauvira, and Taitala are of middle quality; and the rest ordinary. These three may be trained either for war or for riding according as they are furious, mild, or slow. Horses shall be washed, bedaubed with sandal powder, and garlanded twice a day. There were veterinary surgeons to look to the medical treatment of horses. Special servants were employed to move the horses, to tether them in stables, to supply meadow-grass, to cook the grains for the horses, to keep watch in the stables, to groom them, and to apply remedies against poison. ⁷⁴

A special Superintendent was appointed for the training of elephants. It is said that "the victory of kings (in battles) depends mainly upon elephants; for elephants, being of large bodily frame are capable not only to destroy the arrayed army of an enemy, his fortifications, and encampments, but

also to undertake works that are dangerous to life." The efficiency of the army thus depended upon the efficiency of the elephants often: and many a battle has been on record in early Indian history, in which elephants carried the day. The capture of elephants was therefore an important economic activity. The summer is said to be the season to capture elephants. Young elephants, infatuated elephants, elephants without tusks, diseased elephants, elephants which suckle their young ones, and female elephants are not to be captured. The elephants twenty years old and older ones are to be captured. That which is forty years old is the best. We have got two accounts of the way in which elephants were captured, the one from Kautilya, and the other from Megasthenes. Here is a passage from the Arthashastra. "Guards of elephant forests, assisted by those who rear elephants, those who enchain the legs of elephants, those who guard the boundaries, those who live in forests, as well as by those who nurse elephants, shall with the help of five or seven female elephants to help in tethering wild ones, trace the whereabouts of herds of elephants by following the course of urine and dungs left by elephants and along forest tracts covered over with branches of Bhallataki, and by observing the spots where elephants slept or sat.

before, or left dungs, or where they had just destroyed the banks of rivers or lakes." ⁷⁵ "The manner of hunting the elephant is this. Round a bare patch of ground is dug a deep trench about 5 or 6 stadia (a stadium = $202\frac{1}{2}$ yds) in extent, and over this is thrown a very narrow bridge which gives access to the enclosure. Into this enclosure are introduced three or four of the best-trained female elephants. The men themselves lie in ambush in concealed huts. The wild elephants do not approach the trap in the daytime, but they enter it at night, going in one by one. When all have passed the entrance, the men secretly close it up; then, introducing the strongest of the tame fighting elephants, they fight it out with the wild ones, whom at the same time they enfeeble with hunger. When the latter are overcome with fatigue, the boldest of the drivers dismount unobserved, and each man creeps under his own elephant, and from this position creeps under the belly of the wild elephant, and ties his feet together." ⁷⁶

We are told that the best elephants were imported from Kalinga, Anga, Karusha, and the East; those of middle quality came from the Dasha-rna and Western countries; and Saurashtra and Panchajana countries gave elephants of low quality.⁷⁷

III.

1. Agricultural Organisation in the Vedic period. The Monsoons.

The importance of rains is clearly associated with the importance attached to agriculture in those days. It is a peculiarity of this country that its prosperity to a very great extent depends upon the prosperity of its agriculture, which in its turn depends the timely presence of rains in the country. The Vedic Aryans knew it too well. The most important economic fact every year here is therefore the advent of the rains. The following passage gives a beautiful description of the sentiments inspired by the rainfall in the Vedic Rishis. "Forth burst the winds, down come the lightning-flashes: the plants shoot up, the realm of light is streaming. Food springs abundant for all living creatures, what time Parjanya quickens earth with moisture. Thou at whose bidding earth bows low before thee, at whose command hooved cattle fly in terror, at whose behests the plants assume all colours, even thou Parjanya, grant us protection. Thunder and roar: the germ of life deposit. Fly round us on thy chariot, water-laden. Thine opened water-skin draw with thee downwards, and let the hollows and heights be

level. Lift up the mighty vessel, pour down water, and let the liberated streams rush forward. Saturate both the earth and heaven with fatness, and for the cows let there be drink abundant." ⁷⁸ " Parjanya is the God who forms in kine, in mares, in plants of earth, and mankind, the germ of life ". ⁷⁹ But when it has rained sufficiently, the Rishi cries out: "Thou hast poured down the rain-flood; now withhold it. Thou hast made desert places fit for travel. Thou hast made herbs to grow for our enjoyment: Yea, thou hast won thee praise from living creatures." ⁸⁰ It is the Maruts who are " the shakers of heaven and earth " and who " scatter clouds about the sky, and away over the bellowy sea." ⁸¹ Hence hymns are addressed to the Maruts to bring showers in the rainy season, and thus to make all life not only happy, but even possible.

2. Classification of lands : Khilya.

Lands were classified as waste land, forests, and cultivated land. The waste land was called Khila or Khilya. It meant the land lying between cultivated fields. Pischel thinks that it means broad lands, which were used for the pasturing of the cattle of the community, and were not broken up by cultivated fields. But Oldenberg understands by

it the land which lay between cultivated fields. This agrees with the fact that in the Vedic times separate fields were known.⁸³

Forests.

Forests are referred to. The Aranya or forest meant the uncultivated land beyond the village. It is contrasted with home.⁸³ It is contrasted with the settled village or grama.⁸⁴ It is the home of thieves as well as hermits.⁸⁵ It is contrasted with ploughland.⁸⁶ The following hymn is addressed to the tutelary goddess of forests (aranyani). "Goddess of wild and forest who seemest to vanish from the sight. How is it that thou seekest not the village? Art thou not afraid? What time the grasshopper replies and swells the shrill cicada's voice, seeming to sound with tinkling bells, the Lady of the Wood exults. And, yonder cattle seem to graze, what seems a dwelling-place appears: or else at eve the Lady of the Forest seems to free the wains. Here one is calling to his cow, another there hath felled a tree: at eve the dweller in the wood fancies that somebody hath screamed. The Goddess never slays, unless some murderous enemy approach. Man eats of savoury fruit and then takes, even as he wills, his rest. Now have I praised the Forest

Queen, sweet-scented, redolent of balm, the mother of all sylvan things, who tills not but hath stores of food."⁸⁷ "(Agni) eats the wood as a king eats the rich, when through the forest urged by the wind, he spreads, verily Agni shears the hair of earth."⁸⁸ Extensive forests are referred to. (Dirgharanya). These must have covered Northern India.⁸⁹

Fields.

The use of the word Kshetra definitely establishes the existence of separate fields in the Vedic period. "Whose words were passing sweet, as a fair *field* to its lord."⁹⁰ It was a subject of individual ownership. "He having found great, splendid, rich dominion (kshetra), sent life and motion to his friends and lovers."⁹¹ The epithet 'kshetrapati' (master of the field) refers probably to the god presiding over each separate field.⁹² In the Sh. Br. VII. 1. 1. 8. a kshatriya, with the consent of the people, gives a settlement to a man; that is, presumably, assigns to him a definite kshetra of his own.

Urvara means cultivated land, ploughland. Fields were either fertile (apanasvati) or waste (artana).⁹³ The urvara like the kshetra also

points to individual ownership. Thus Apala, the daughter of Atri asks for three boons from Indra : " O Indra, cause to sprout again three places, these which I declare,—my father's head, his cultured field, and this the part below my waist. Make all of these grow crops of hair, yon cultivated field of ours, my body, and my father's head. " ⁹⁴

3. Measurement of fields.

If any proof were still needed of the establishment of separate holdings in the Vedic period, we find it in the institution of land measurement. " From front, as it were a house he ruled and measured. " ⁹⁵ " They decked the heaven and earth for high dominion, measured with measures, fixed their bread expansion. " ⁹⁶ The field measurement also is expressly alluded to. " The Ribhus with a rod measured as it were a field. " ⁹⁷ The Atharvaveda mentions two units of measurement; the *abhishu*, lit, rein-evidently a short measure, and the *vyama*, the space between the tips of the fingers, when the arms are extended. ⁹⁸

Now we are told that the *kshetras* were measured : but not *urvara*. It is possible therefore that the *urvara* belonged to an earlier age

When agriculture was not sufficiently developed. In Greek the word *Aroura* means the same thing as the *Urvara* in the *Rigveda*. Evidently therefore the word *urvara* may have been very ancient. The real distinction between the *kshetra* and the *urvara* seems to be this: the *kshetra* meant all the fields of a man's holding, while *urvara* meant the cultivated portion only. It was therefore necessary that the *kshetra* should be carefully marked, in order that the property of different owners may be clearly distinguished.⁹⁹

4. Cultivation.

Dr. Mac Donnell points out that the Indians must have known the cultivation of the soil (*krishi*) long before they separated from the Iranians, as is indicated by the identity of the expressions *Yavam krish* and *Sasya* in the *Rigveda* with *Yao karesh* and *Hahya* in the *Avesta* referring to the ploughing in of the seed, and to the grain which resulted. Ploughing is frequently mentioned. "Ploughing and sowing barley, O ye Aswins... Ye gave far-spreading light unto the Arya."¹⁰⁰ A gambler is called upon to go back to his fields. "Play not with dice: no, cultivate thy corn-land."¹⁰¹

The cultivators (kinasha) ploughed the ground, the plough being drawn by two oxen. "Like two plough-bulls ye move along in traces." ¹⁰² These bulls were fastened to the yoke with hempen or leather traces and driven with a goad. "Lay on the yoke: fasten well the traces." ¹⁰³ "Happily work our steers and men, may the plough furrow happily. Happily may the traces bound; happily may he ply the goad." ¹⁰⁴ Sometimes the plough was drawn by teams of six, eight, or twelve oxen. ¹⁰⁵ Ploughing by means of steers is often mentioned. "As the steer ploughs the barley in." ¹⁰⁶ "As one who ploughs with steers brings corn." ¹⁰⁷ Various words were used for the plough: vrika, shira, langala; the ploughshare was known as phala; while the word sita was used for furrow. There is a hymn in which various agricultural personifications are addressed. "Suna and Sira (plough and ploughman), welcome ye this lord, and with the milk which ye have made in heaven, bedew ye both this earth of ours. Auspicious Sita, (husbandry), come thou near; we venerate and worship thee, that thou mayst bless and prosper us and bring us fruits abundantly. May Indra press the furrow down, may Pushan guide its

course aright...Happily let the shares turn up the ploughland, happily go the ploughers with the oxen."¹⁰⁸ "The ploughshare ploughing makes the food that feeds us, and with the feet cuts through the path it follows."¹⁰⁹ "Let the plough (langala), lance - pointed, well - lying, with well - smoothed handle, turn up (ud - vap) cow, sheep, an on - going chariot - frame, and a plump wench."¹¹⁰ The ploughshare therefore was made of iron, and it supplanted the older ploughshare made of khadira wood.¹¹¹

The main agricultural operations are summed up in the Shatapatha Brahmana as "ploughing, sowing, reaping, and threshing, (krishantah, vapantah, lunatah, mrinantah.)"¹¹² The ripe grain was cut with a sickle (datra or srini) and bound up into bundles, and beaten out on the floor of the granary. Three sheaves were left to the good goblins that guarded the field.¹¹³ Four sheaves were tied together and hung in the house to propitiate the goddess of the house. After threshing was over, the grain was separated from the straw by means of the sieve or the winnowing fan (titau). The winnower was called dhanyakrit, and the grain was measured

in a vessel called urdara. The corn was then carted to the homes, and stored up in granaries. It was measured after being stored, the unit of measure being called khari. The following passages illustrate some of these processes.

"Lay on the yokes, and fasten well the traces : formed is the furrow, sow the seed within it... near to the ripened grain approach the sickle. Wise, through desire of bliss from Gods, the skilful bind the traces fast, and lay the yokes on either side." ¹¹⁴ "O gather thou up as grains of corn." ¹¹⁵ "Indra, through hope in thee alone even this sickle do I grasp. Fill my hand Maghavan, with all that it can hold of barley cut or gathered up." ¹¹⁶ "Ye (Ashwins) with your plough, when favouring Manu with your help, ploughed the first harvest in the sky." ¹¹⁷ "Like many sheaves upon the floor (khala) I thrash him." ¹¹⁸ "Brihaspati strewed down, like barley out of winnowing - baskets, the vigorous, wandering cows." ¹¹⁹ (The cows bestowed by Brihaspati were countless as grains of barley on the threshing - floor or winnowing - place) "Like tillers of the ground when they are sowing seed." ¹²⁰ "As men whose fields are full of barley reap the ripe corn removing it in order." ¹²¹

"Harness ye the ploughs, extend the yokes : scatter (vap) the seed here in the prepared womb... May the sickles draw in the ripe (grain) yet closer." ¹²²

5. Irrigation and Manure.

It is interesting to note that as early as the Vedic period, the Aryans knew full well the treachery of the rains and consequently did not merely depend upon the mercy of the heavens but resorted to artificial methods of reinforcing the operation of natural agencies. Thus we are told that manures were used to fertilize the soil. Excrements seem to be utilized as manure, and we find the Ribhus separating the sakrit or dung from the other parts. ¹²³ But even more noteworthy is the early development of irrigation in India. One epithet of waters or apah is 'Khanitrima' 'produced by digging.' This clearly refers to artificial water channels used in those times. "Forth from the middle of the flood the waters-their chief the sea-flow cleansing, never sleeping; Indra, the Bull, the Thunderer, dug their channels. Waters which come from heaven, or those that wander dug from the earth, or flowing free by nature, bright, purifying, here let those waters, goddesses, protect me." ¹²⁴ The word Kulya

according to Dr. Muir refers to artificial water courses, flowing into a reservoir (hrada). "Like water brooks that reach the lake." ¹²⁵ "Thou diggest out their all-supporting channels." ¹²⁶ "Thou, Indra, didst with magic power resist the over-flowing stream, who spread her waters over the land." ¹²⁷ "Indra who wields the thunder, dug out channels." ¹²⁸ "As water brooks flow down and fill the lake." ¹²⁹ One of the leading types of irrigation works was wells. These were called Avata...artificially made (khan-to dig) in contrast with a spring (utsa). "Ye lifted up the well, O ye Nasatyas, and set the base on high to open downward; streams flowed for folk of Gotama who thirsted, like rain to bring forth thousandfold abundance." ¹³⁰ "From deep well ye raised on high the water, so that Richatka's son, Sara should drink it." ¹³¹ "For thee were dug wells springing from the mountain, which murmuring round about pour streams of sweetness." ¹³² One passage also describes how the water was raised from these wells. It was raised by a wheel of stone (chakra) to which was fastened a strap (vatra) with a pail (kosha) attached to it. When raised, it was poured into buckets of wood. Sometimes the water from these wells was led off into broad channels. "Arrange buckets in their place; securely

fasten on the straps, we will pour forth the well that hath a copious stream, fair-flowing well that never fails. - I pour the water from the wells with pails prepared and goodly straps, unfailing, full, with plenteous stream...Pour forth the well with stone wheel, wooden buckets." ¹³³

6. Difficulties of the Farmer

Yet agriculture was not all smooth sailing. The shortage of rains was only one of these difficulties. Excessive rain was also an object of apprehension, because it would damage the crops. Moles often destroyed the seeds. Birds were a great nuisance; the farmers used to keep them away from robbing them of the growing corn, by uttering loud cries. ¹³⁴ Other enemies of the agriculturists were rodents, insects, and demons, which were exorcised by means of spells. "Smite, O Ashvins, the borer, the samanka, the rat, split their head; crush in their ribs: lest they eat the barley; shut up their mouth; then make fearlessness for the grain. O lord of borers, lord of vaghas, with arid jaws do ye listen to me. What devourers there are of the forest, and whatever devourers ye are, all of them do we grind up." ¹³⁵ Wishes are also expressed that the grain may not be smitten by lightning, and by the sun's rays. ¹³⁶

7. Agricultural Products.

What precise species of grains were cultivated by the Vedic Aryans is not quite clear. The words of most frequent occurrence in the Rigveda for grain are yava and dhana. But both these words are very vague, and they often mean nothing more than grain in general. In the later Vedic literature, we meet with varieties of grains. Yava then definitely means barley ; Vrihi or rice then appears.¹³⁷ It ripened in autumn.¹³⁸ It was indigenous in the south-east of India :¹³⁹ hence the absence of all reference to it in the Rigveda. Rice is distinguished as black, white, dark, swift-growing, and large.¹⁴⁰ Godhuma or wheat is distinguished both from rice (vrihi) and barley (yava).¹⁴¹ Groats (Saktavah) are also mentioned.¹⁴² Tandula means rice grain. It is either husked (karna) or unhusked (akarna).¹⁴³ The Brihadaranyaka Upanishad mentions ten kinds of cultivated (gramya) grains : rice and barley (vrihiyavah), sesamum (tala), beans (masha), millet, panick seed (anu-priyangavah), wheat (godhuma), lentil (masurah), pulse and vetch (khala-kulah).¹⁴⁴ Venu (bamboo-reeds) is often mentioned : the epithet from it is vetasvant 'abounding in reeds.'¹⁴⁵ It is described as hollow. It ripened like sasya in

spring. Shana or hemp is said to grow in the forest. It was used as a remedy against Vishkandh. Ghasa or fodder is also mentioned. Among other products are mentioned, salt (lavana) and bdellium (guggulla). The guggulla is said to be produced by the Sindh and the sea. But bdellium is the gum of a tree, not a product of the sea. Hence the reference to sea might suggest sea-borne trade in bdellium. There is no reference to salt in the Rigveda. It is however considered as of extremely high value in the later Vedic literature. "As a piece of salt, when thrown into water, is dissolved into mere water, and none is capable of perceiving it because, from whatever place a person might take water, it would have the taste of salt." "As gold is corrected by salt, and silver by gold, and tin by silver, and lead by tin, and iron by lead, and wood by iron or leather." Here salt is placed even above gold. About the cultivation of fruit trees, there is no definite evidence. We find mention of ripe branches (pakva-shakha,) ripe-fruited trees, and ripened fruit: but it does not prove the presence of arboriculture. Cucumbers, the jujube, karkandha and kuvala are referred to.

We have some light thrown on the precise seasons for agricultural operations for different crops.

Thus barley was sown in winter and reaped in summer ; rice was sown in the beginning of the rainy season and reaped in autumn ; beans and sesamum were planted at the time of the summer rains and reaped in winter.¹⁴⁶ There were two annual harvests (Sasya).¹⁴⁷

IV.

1. Agricultural Organization in post-Vedic India. Importance of Agriculture.

It is necessary at this stage to appreciate the immense importance of agriculture in the economic life of the Aryan people. The main industry of the ancient Hindus was agriculture. It was agriculture which employed the largest part of the population. It was agriculture upon which people depended for their very existence. It was not therefore one industry among others : it was the central, the pivotal national industry of the ancient Hindus (as it is even of the modern Indians), determining the very type of genral economic and social structure of the community. " The very name Arya, by which the Aryan conquerers of India have distinguished themselves from the Aborigines or Dasas, is said to come from a root which means to cultivate. Professor Max Muller believes that traces of this root are

to be found in the names of many Aryan countries, from Iran or Persia, to Erin or Ireland, and argues that the word was invented in the primeval home of the Aryans, to indicate their partiality to cultivation, as distinguished from the nomadic habits of the Turanians, whose name is supposed to indicate their rapid journeys or the fleetness of their horse. Certain it is that the word Arya is the one word in the Rigveda which distinguishes the conquerors as a class, or even as a caste, from the aborigines of the country. And there are remarkable passages also which show that the new settlers, in calling themselves Arya, had not altogether forgotten the original signification of the word. One instance will suffice :—‘ O ye two Ashwins! – You have displayed your glory by teaching the Arya to cultivate with the plough and to sow corn, and by giving him rains for the production of his food, and by destroying the Dasyu by your thunderbolt.’ (1. 117, 21)... Thus the very names which the Aryan conquerors of India gave themselves are names which are believed to indicate that useful occupation which distinguishes the civilized man from the barbarian, viz. cultivation of the soil.” 148

The following questions put by Narada to Yudhishtira indicate the exact place of agriculture in the national economy of the ancient Aryans. " Are the agriculturists in thy kingdom contented ? Are large tanks and lakes established all over thy kingdom at proper distances, without agriculture being in thy realm entirely dependent on the showers of heaven ? The agriculturists in thy kingdom want not either seed or food ? Grantest thou with kindness loans (of seed-grain) unto the tillers, taking only a fourth in excess or of every measure by the hundred ? O child, are the four professions of agriculture, trade, cattlerearing, and lending on interest, managed by honest men ? Upon these, O monarch, depends the happiness of thy people. O king, do the five wise and brave men, employed in the five offices of protecting the city, the citadel, the merchants, and the agriculturists, and punishing the criminals, always benefit thy kingdom by working in union with one another ? " ¹⁴⁹ Agriculture as a profession is specially recommended in the Shukraniti. " Agriculture which is said to have rivers for mothers, is a good occupation. The occupation of Vaishyas is intermediate, that of Shudras is inferior. " ¹⁵⁰ It is best to look to one's fields oneself : any delegation

of this work to others is ruinous. "One should devolve the overlooking of his inner apartment on his father, of the kitchen on his mother : of kine on somebody he looks upon as his own self; but as regards agriculture one should look to it oneself." 151
 The same idea is repeated in the Shukraniti. "A proxy is not desirable in the matter of penances, women, agriculture, service, enjoyment and eating, but should be appointed for other functions." 152

2. Forests.

It is difficult to overrate the importance of forests in the economics of a country. It is even more so in the case of India. "The grazing which they annually afford to countless herds, assumes a special value in years of drought, when it renders material assistance in saving from starvation the cattle upon which the agriculture of the country depends. They afford the villagers who live in their vicinity a ready supply of material for house-building and thatching, of fuel, and of minor forest products, which add substantially to the comforts of their life. And the use of forest leaves as manure for the cultivator's fields has already assumed large dimensions." 153

A special department of forests existed. "Brah-

mans shall be provided with forests for Soma plantation, for religious learning, and for the performance of penance, such forests being rendered safe from the dangers from animate or inanimate objects, and being named after the tribal name (gotra) of the Brahmans resident therein." A special forest is to be provided for the king's sports. One game-forest with game-beasts, open to all is to be made. Several forests are reserved for the cultivation of various kinds of forest produce. ¹⁵⁴

The cultivation of parks for public health, and recreation is one of the activities of the forest officer. The expenditure on parks is considered as belonging to the upabhogya class. ¹⁵⁵ Men who construct parks, artificial forests, and pleasure gardens deserve the protection of the State. ¹⁵⁶ But while the parks are a pure source of expenditure to the State, the forests are a source of revenue. "The king should realise one-third, one-fifth, one-seventh, one-tenth, or one-twentieth, from the collectors of grass, wood etc." ¹⁵⁷

Certain agricultural industries were organised for the utilization of the forest produce. Timber was one of the most important forms of raw material supplied by the forest : and timber was useful in the manufacture of all wooden arti-

cles such as bridges, boats, cars, chariots etc. One special industry dependent upon the forests was the Ayurvedic preparations from the vegetable drugs. The Shukraniti mentions in particular the following agricultural industries : (1) cleansing, polishing, dyeing etc. of wooden vessels ; (2) preparation of boats, chariots, and conveyances ; (3) preparation of threads and ropes ; (4) weaving of fabrics by various threads ; (5) extraction of oil from seeds ; (6) climbing of trees ; (7) preparation of vessels with bamboo, straws etc; and (8) making and preservation of betels. ¹⁵⁸

3. Size and measurement of fields.

The arable ground extending round the village is known as "the field" (khetta). ¹⁵⁹ Accurate measurement of fields and their exact demarcation from each other was a work which engaged much attention of the people as well as Government. Disputes often arose as to the exact boundaries of villages as well as fields. Trees such as the Nyagrodha, Ashwattha, Kinshuka, Salmali, Sala, Tala and Kaheri are made boundaries. Boundaries demarcated by shrubs, bamboos,

various kinds of Shamis, creepers, mud - pillars, or kunjaka plants are never obliterated. At the meeting of boundaries, tanks, ponds, fountains, or reservoirs of water should be made, or divine temples should be erected. Stones, bones, cow's hairs, husks of paddy, ashes, bits of broken pottery, dried cowdung cakes, bricks, charcoals, broken bits of baked clay and sands: that is to say, all things which the earth may not consume in course of time should be buried underneath the soil for the purpose of fixing the boundaries. ¹⁶⁰

Equally important was the question of the demarcation of the boundaries of fields. In demarcating the boundaries of a field, well, pond, orchard, or a house, the testimony of a man living in the neighbourhood and cognisant thereof, is to be taken. ¹⁶¹ All the fields were required to be enclosed with a fence: for if the cattle graze on and destroy the crops standing on an unfenced ground, adjoining the pastureland, the king is to inflict no penalty on the cattle-keepers. But if a flock of sheep attended by its keeper, trespasses on an enclosed field near the road-side, or at the outskirts of a village, or

close to a pasture ground, the king is to fine him a hundred panas.¹⁶² The nature of the fences is also described by Manu. "Such a land should be enclosed with a fence or enclosure over which a camel would not be able to see, and too dense to allow a dog or a hog to thrust its nose or snout into it."¹⁶³ All disputes concerning these boundaries are to be decided by the elders of the neighbourhood of the village, or by a number of pure and respectable people. Otherwise the disputants may divide the disputed holding equally among themselves. If all these methods fail, the disputed holding is to go to the State.¹⁶⁴

In the Pali literature we also read of these boundaries. But here we find that there was a common enclosure for the village field or the gamakhetta. Fences, snares, and field watchmen guarded the gamakhetta from mischievous birds and beasts. The field was divided into plots corresponding in number to that of heads of houses in the village. The internal boundaries of these plots were made by channels dug for cooperative irrigation. These dividing ditches, rectangular and curvilinear, were likened to a patchwork robe, and prescribed as a pattern for the uniform of

the Buddhist order. " And the Blessed One beheld how the Magadha rice fields were divided into short pieces, and in rows, and by outside boundaries, and by cross boundaries. On seeing this the Blessed One spoke thus to the venerable Ananda: ' Dost thou perceive, Ananda, how the Magadha rice fields are divided into short pieces, and in rows, and by outside boundaries, and by cross - boundaries ? ' ' Even so, my Lord. ' ' Could you, Ananda, provide robes of a like kind for the Bhikkhus ? ' ' I could, my Lord. ' " ¹⁶⁵ In one passage we are told how some owners of the field kept their fields unfenced, while others carefully enclosed them by means of fences. " Just, O king as while one man who has sown a field, and got the seed to grow can, by the exertion of his own power, and without any rampart or fence reap the crop - whereas another man when he has got the seed to grow must go into the woods, and cut down sticks and branches, and make a fence of them, and thus only reap the crop. " ¹⁶⁶

Measurement of fields also was a common phenomenon. The organisation of a general cadastral survey is the prime requisite of a stable land revenue system. " How many cities, villages, and

forests are there, the amount of land cultivated, who is the receiver of the rent, the amount of revenue realised ; who receives the remainder after paying off the rent, how much land remains uncultivated, the amount of revenue realised through taxes and fines ; the amount realised without cultivation ; how much accrues from forests ;" to ascertain all these was the work of the Sumantra. ¹⁶⁷ " Now the driver one day was measuring a field. Tying a cord to a stick he gave one end to the owner of the field to hold, and took the other himself. " ¹⁶⁸

Shukra gives two scales of measurement.

Prajapati	Manu	Measure
(a) 8 Yavas	5 Yavas	equal to 1 Angula
24 Angulas	24 Angulas	" " 1 cubit.
4 cubits	5 cubits	" " 1 Danda
...768 Yavas	500 yavas	" " 1 Danda
(b) 5000 cubits	4000 cubits	" " 1 Crosa
... 25 million	16 million	" " Area of Crosa
sq. cubits	sq. cubits	Area of Crosa
(c) 2500 Parivartanas		Area 1 Parivartan
...10,000 sq. cubit		
(d) 25 Dandas	25 Dandas	1 Nivartana
(e) 25x25 sq. Dandas equal to 625.		Area of Nivartana

Kautilya also gives a more detailed scale of measurement. ¹⁶⁹

It is probable that the majority of holdings were small, manageable singlehanded, or with sons and perhaps a hired man. ¹⁷⁰ Yet we have here and there references to large estates. "At that time there stood a Brahmin village, named Salindya, towards the north - east... There was a Brahmin who lived in Salindya, whose name was Kashyagotta, and he held an estate of one thousand acres (karishas), where he grew rice. When the crop was standing, he made a stout fence, and gave the land in charge to his own men, to one fifty acres, to another sixty, and so he distributed among them some five hundred acres of his estate. The other five hundred he delivered to a hired man for a wage, and the man made a hut and dwelt there day and night." ¹⁷¹ Another Brahmin had 8000 acres of land, which he used to cultivate with his own men. ¹⁷²

4. Degrees of Productivity of Land.

It is asked in the Arthashastra ; which land is better for colonization ? a plain or a watery land ? A limited tract of land with water is far

better than a vast plain, inasmuch as the former is conducive to the growth of crops and fruits throughout the year? Of plains, that which is conducive to the growth of both early and late crops and which requires less labour and less rain for cultivation is better than the other of reverse character. Of watery lands, that which is conducive to the growth of grains is better than another productive of crops other than grains. Of two watery tracts, one of limited area and conducive to the growth of grains, and another vast and productive of crops other than grains, the latter is better, inasmuch as it affords vast area not only to grow spices and other medicinal crops, but also to construct forts and other defensive works in plenty; for fertility and other qualities of land are artificial (kritrimah). Of the two tracts of land, one rich in grains and another in mines, the latter helps the treasury and the storehouse; and besides this, the construction of forts and other buildings requires grains. Still, that kind of land containing mines and which yields precious metals to purchase large tracts of land is far better. Of the two forests, the timber - forest and the elephant - forest, each has its advantages.

The former is the source of all kinds of works ; and the latter yields a supply of elephants upon which depends the destruction of an enemy's army. Of cultivated and uncultivated tracts, the uncultivated tract may be suitable for various kinds of agricultural operations ; and when it is fertile, adapted for pasture grounds, manufacture of merchandise, mercantile transactions of borrowing and lending, and attractive to rich merchants, it is still far better than a cultivated tract. 173

5. Irrigation and Rains.

The problem of water - supply is fundamental in the economics of a predominantly agricultural country. In India from the earliest time, it has been realized that the natural supply of water in the form of rains is the most important economic event of the year ; but it is dependent upon the mercy of the heavens. Hence the necessity of an artificial supply by the construction of irrigation works. Narada asks : " Are large tanks and lakes established all over thy kingdom at proper distances, without agriculture being in thy realm entirely dependent on the showers of heaven ? " 174

The Gita says **सर्वमप्यन्ति मृतानि पर्जन्यादनामयः** :
All creatures have their source in food ; but
food has its source in the rains. " Just, O king,
as the rain makes all kinds of vegetation to
grow...and again, O king, just as the rain-cloud,
rising up in the hot season, affords protection to
the grass, and trees, and creepers, and shrubs,
and medicinal herbs, and to the monarchs of the
wood that grow on the surface of the earth...
and, again, O king, as the rain when it pours
down fills the rivers, and reservoirs, and artificial
lakes, the caves and chasms, and ponds, and
holes, and wells with water. " 175

A pretty type of meteorology is found in the Arthashastra. Meteorology may be a pedantic term to use in connection with the empirical knowledge of the conditions of rain-fall of the ancient Aryans ; yet they had a working knowledge of that science. A vessel with its mouth aratni (about 2 ft.) wide was used as a rain - gauge and one such vessel placed before the store - house. One way in which they tried to forecast the possible rainfall in a year was the observation of planets. " A forecast of such rain - fall can be made by observing the

position, motion, pregnancy of the Jupiter, the rising and setting and motion of the Venus ; and the natural or the unnatural aspect of the sun. From the sun, the sprouting of the seeds can be inferred ; from (the position of) the Jupiter, the formation of grains can be inferred ; and from the movements of the Venus, rainfall can be inferred." The quantity of rainfall was never even all over the country, but varied with the nature of the place. Thus, 16 dronas were the normal rainfall in desert countries (jangala) : half as much more in moist countries ; 13 $\frac{1}{4}$ dronas in the country of ashmakas (Maharashtra) ; 23 dronas in Avanti, and an immense quantity in the western countries (the konkana), the borders of the Himalayas, and the countries where water - channels are made use of in agriculture. The rainfall is considered very even when one - third of the requisite quantity of rain falls both during the commencement and closing months of the rainy season, and two thirds in the middle. Where rain, free from wind and unmingled with sunshine, falls so as to render three turns of ploughing possible, there the reaping of good harvests is certain. Hence according as the rainfall is more or less, the seeds which require more or less water are to be sown. 176

In discussing the truth of the rival doctrines of fate and free - will, the Mahabharata brings in the two types of water - supply in India. " Behold, the soil is moistened and diveded of weeds by human exertion. Without rains, however, O son of Kunti, it never yieldeth crps ! Indeed, in the absence of rain people speak of artificial irrigation as a means of success due to human exertion, but even then it may be seen that the water artificially let in is dried up in consequence of a providential drought. " 177

The appreciation of irrigation works is further attested by the fact that the construction of tanks was considered an act of very great charity. " The man who causes tank to be dug becomes entitled to the worship of the three worlds. A tank full of water is as agreeable and beneficial as the house of a friend. A tank is said to be subservient to all the four purposes of living creatures. Tanks again are regarded as constituting the excellent beauty of a country... The wise have said that that man reaps the merit of an Agnihotra sacrifice in whose tank water is held in the season of rains. " 178

The classical writers testify to the existence of irrigation works in ancient India. "There are many channels to convey water from the rivers, some of them large, and others smaller, and they mingle with each other. They are made by the inhabitants as suits their pleasure : and they convey water in ducts with facility, just as you convey water for the irrigation of your gardens."¹⁷⁹ Megasthenes also clearly refers to the presence of an extensive system of irrigation in India. "The greater part of the soil is under irrigation, and consequently bears two crops in the course of a year."¹⁸⁰ "Some superintend the rivers, measure the land as is done in Egypt, and inspect the sluices by which water is let out from the main canals into other branches, so that everyone may have an equal supply of it."¹⁸¹

The Arthashastra refers to various kinds of irrigation. Of irrigation works that which has perennial supply of water is better than that which is fed with water drawn from other sources; and of works which have a perennial supply, that which can irrigate an extensive area is better.¹⁸² Water rates differed with the types of irrigation systems. Those who cultivate land

irrigated by manual labour are to pay $1/5$ th of the produce as water - rate ; by carrying water on the shoulders, $1/4$ of the produce ; by water-lifts $1/3$ rd of the produce ; and by raising water from rivers, lakes, tanks, and wells, $1/3$ rd or $1/4$ th of the produce. ⁵⁸³ Irrigation by means of wind power as well as bullocks is referred to. ¹⁸⁴ Persons who cultivate the lands below tanks etc. of others at a stipulated price, or for annual rent, or for certain number of shares of the crops grown, or persons who are permitted to enjoy such lands free of rent of any kind, are required to keep the tanks etc in good repair. Persons are fined for letting out the water of tanks etc. at any other place than their sluice gate, for obstructing the flow of water from the sluice - gate, for stopping the natural flow of water from a higher to a lower tank, and for emptying a tank of its water. ¹⁸⁵

Agricultural operations.

The various processes that agriculture has to go through from the clearing of the field to the gathering in of the harvest are mentioned in detail in the following passages: " And just, O king, as a husbandman will first remove the de-

facts in the soil - weeds and thorns and stones -
 and then by ploughing, and sowing, and irriga-
 ting, and fencing, and watching, and reaping, and
 grinding will become the owner of much flour,
 and so the lord of whatsoever are poor and needy,
 reduced to beggary and misery." 186 " But come
 now, O beloved Aniruddha, I will tell you what
 is incident to the household life. First, you have
 to get your fields ploughed. When that is done
 you have to get them sown. When that is done,
 you have to get the water led down over them.
 When that is done, you have to get the water
 led off again. When that is done, you have to
 get the weeds pulled up. When that is done,
 you have to get the crop reaped. When that is
 done, you have to get the crop carried away.
 When that is done, you have to get it arranged
 into bundles. When that is done you have to
 get it trodden out. When that is done, you
 have to get the straw picked out. When that is
 done, you have to get all the chaff removed.
 When that is done, you have to get it winnowed.
 When that is done, you have to get the harvest
 garnered. When that is done, you have to do
 just the same the next year, and the same all
 over again the year after that." 187

This passage very excellently describes all the processes of agriculture. The most essential requisites for ploughing the field are a plough and a pair of bullocks. "Now his father lived by ploughing the land, but he had only one pair of oxen; and one of them died. He came before the Bodhisatta and said to him, 'Son, one of my oxen is dead, and the ploughing does not go on'"¹⁸⁸ The next important operation was the sowing of seeds. "Would selected seed, O king, successfully sown in a well-ploughed, well-watered fertile soil come to maturity?" "Certainly, sir." "But would the same seed grow on the surface of a thick slap of rock?" "Of course not."¹⁸⁹ "The seeds of grains are to be exposed to mist and heat for seven nights; the seeds of kosi (such as mudga, masha etc.) are treated similarly for three nights; the seeds of sugarcane and the like are plastered at the cut end with the mixture of honey, clarified butter, the fat of hogs and cowdung; the seeds of bulbous roots with honey and clarified butter; cotton-seeds with cow-dung; and waterpits at the roots of trees are to be burnt and manured with the bones and dung of cows on proper occasions. The sprouts of seeds, when grown, are to be manured with a fresh haul of minute fishes and irrigated with the milk of

snuhi..... Always while sowing seeds, a handful of seeds bathed in water with a piece of gold shall be sown first and the following mantra recited : Salutation to God Prajapati Kashyapa. Agriculture may always flourish and the Goddess (may reside) in seeds and wealth. ¹⁹⁰

Care should be exercised in selecting particular crops for particular seasons and particular fields. Not all types of lands are suited for all products. Lands that are beaten by foam are suitable for valliphala (pumpkin, gourd and the like); lands that are frequently overflowed by water for long pepper, grapes, and sugarcane ; the vicinity of wells for vegetables and roots ; low grounds for green crops ; and marginal furrows between any two rows of crops are suitable for the plantation of fragrant plants, medicinal herbs, cascus roots, pindaluka (lac) and the like. Such medicinal herbs as grow in marshy grounds are to be grown not only in grounds suitable for them, but also in pots.¹⁹¹

Sali (a kind of rice), vrihi (rice), kodrava, tila (sesamum), priyangu (panic seeds), are to be sown at the commencement of the rainy season. Mudga and Masha are to be sown in the middle of the season. Kusumpha (safflower), masura, kuluttha,

yava (barley), godhuma (wheat), kalaya (leguminous seeds), atasi (linseed) and sarshapa (mustard) are to be sown last or seeds may be sown according to the changes of the season.

The superintendent shall grow wet crops (kedar), winter-crops (haimana) or summer crops (graishmika) according to the supply of workmen and water. Rice - crops and the like are the best, vegetables are of intermediate nature ; and sugarcane crops are the worst (i. e. very difficult to grow), for they are subject to various evils and require much care and expenditure to reap. ¹⁹²

The clearing of the weeds is a necessary preliminary to the gathering in of the harvest. " The fields are damaged by weeds ; mankind is damaged by passion. " ¹⁹³ " As a weeder weeds out the weeds and preserves the paddy plants in the fields, so a king must protect the kingdom and destroy its enemies. " ¹⁹⁴ " The reclaimer of a field, for reclaiming it, takes up both paddy blades and weeds. His action, however, instead of destroying the blades of paddy makes them grow more vigorously. They that wield weapons destroy many that deserve destruction. Such extensive destruction, however, causes the growth and advancement of those that remain. " ¹⁹⁵

Lastly, there is the gathering-in of the ripe corn. "How do they reap the barley?" "With the left hand they grasp the barley into a bunch, and taking the sickle into the right hand, they cut it off with that." ¹⁹⁶ Kautilya says, "Grains and other crops shall be collected as often as they are harvested. No wise man shall leave anything in the fields, not even chaff. Crops, when reaped shall be heaped up in high piles or in the form of turrets. The piles of crops shall not be kept close, nor shall their tops be small or low. The threshing floors of different fields shall be situated close to each other." ¹⁹⁷

Strict supervision is necessary at every part of the agricultural operations. The Superintendent has to personally supervise the increase or diminution sustained in grains when they are pounded (kshunna), or frayed (ghrishta), or reduced to flour (pishta), or fried (bhrashta) or dried after soaking in water. The essential part (sara i. e. that which is fit for food) of kodrava and of vrihi is one-half: and so on. The various instruments necessary in these processes are: the weighing-balance, weights, measures, mill-stone, pestle, mortar, wooden contrivances for pounding rice etc., (kuttakayantra), contrivances for splitting seeds

into pieces (rochakayantra), winnowing fans, sieves (chalani), grain - baskets (kandoli), boxes and brooms. The operatives employed in these processes are : sweepers, preservers, those who weigh things (dharaka), those who measure grains etc ; those who supervise the work of measuring grains (mapaka), those who supervise the supply of commodities to the store-house (dapaka) ; those who supply commodities (dayaka) ; those who are employed to receive compensation for any real or supposed error in measuring grains etc ; slaves, and labourers. ¹⁹⁸

Measurement of grain was a very essential process from the point of view of State revenue. " Corn is preserved by measure. " ¹⁹⁹ Nothing is to be taken from an untithed field. The claim of the State is prior to all other claims. " Now he had one day gone to his paddy field, and seeing a head of rice bursting the husk, went about to tie it up with a wisp of rice ; and taking a handful of it, he tied the head to a post. Then it occurred to him, — ' From this field I have yet to give the king his due, and I have taken a handful of rice from an untithed field. ! I, who observe the rules of Kuru righteousness ! " ²⁰⁰ " Now this man (master of granaries), as he sat one day at the

door of the granary, causing the rice of the king's tax to be measured, took a grain from the heap which was not yet measured, and put it down for a marker. At that moment rain began to fall. The official counted up the marks, so many, and then swept them all together and dropt them upon the heap which had been measured. Then he ran in quickly and sat in the gate-house. 'Did I throw the markers on the measured heap or the unmeasured!' he wondered; and the thought came into his mind - 'If I threw them on what was already measured, the king's property has increased, and the owner's has lost; I keep the Kuru righteousness: and now here's a flaw!' " 201

When all the details are finished, the remaining quantity of grain is stored up in granary for future use; and we find both private owners as well as the State storing up grain. "Suppose a farmer, great king, had ploughed and sown and filled his granary; and then for a period should neither plough nor sow, but live on the stored-up grain or dispose of it in barter, or deal with it as he had need." 202 There was a special department to look to the storage and management of crops: and even the king was required to devote some time to it. "He should spend four muhurtas over-

writing orders, together with income and expenditure about grains, clothes, gold, jewels, and soldiers. ' 203. It was the duty of the superintendent of the granary to know of the species, measurements, values, essential characteristics of the grains, as well as the methods of consuming, collecting, and cleansing them. 204 It was also the duty of the State to maintain those who live by winnowing grains. 205 The following instructions are laid down for the guidance of the dhanyadhipa - the chief of the granary : (1) grain should be collected sufficient to meet the wants of three years, or more than three years, provided the grains be lasting; (2) only those grains are to be stored up which are well-developed, bright, best of the species, dry, new, or have good colour, smell, and taste, the famous ones, durable, and dear; (3) those grains that have been attacked by poisons, fire, or snow, or eaten by worms and insects, or those that have been hollowed out should not be preserved, but used for immediate consumption; (4) those that have been consumed should be replaced every year by new instalments. 206

7. Varieties of Agricultural Products.

It is pleasant to note that the planting of trees was always considered a very pleasant duty in

India : and once they were there, they were further watered and nourished with truly parental affection. "Of immobile objects six classes have been spoken. They are Vrikshas, Gulmas, Latas, Vallis, Twaksaras and Trinas of various kinds. (Vrikshas are large or small trees generally. Gulma is shrub or bushy plant. Lata is creeper which can not grow without support. Vallis are creepers, but their stems are more tree-like. Twaksara is the bamboo, and Trina means all kinds of grass). These are the several kinds of vegetables.....Trees gratify the deities by their flowers and the Pitris by their fruits, and all guests and strangers by the shadow they afford.....Therefore, the man that is desirous of achieving his own good, should plant trees by the side of tanks, and cherish them like children."²⁰⁷

Most of the leading agricultural products which are known to-day were known then. Thus Mr. Vaidya writes referring to the period of the Mahabharata : " Almost all the kinds of grain then known in India are to-day the principal products of India with a few exceptions...The methods of agriculture were again almost exactly the same as now. Irrigation was specially taken care of by Government and the produce of irrigated lands was then as now more valuable. The sugarcane, indigo (or nili)

and other various vegetable dye crops, which have now become obsolete were cultivated then with success. Probably special attention was paid by the experts to the subjects. (Opium does not belong to India being probably imported into it in later times). Horticulture was also successfully practised. Mango plantation especially was in favour with the rich and mango trees were made to bear fruit within five years. (चूतारामो यथा भग्नः पञ्चवर्षः फलोपगः) ”208

Rice was the staple article of food of a large part of the country. Commenting on the antiquity of civilization, a writer draws attention to the antiquity of rice in India. The exceedingly great antiquity of the cultivation of rice in India, he says, is proved by the name ‘rice’ which is derived from the Tamil ‘arisi.’ Rice was exported from the ancient sea-ports of Barygaza, the modern Broach, and Sarparaka (Surat), which were the headquarters of the western trade, and its exports must date from a time when the people in the west of Bombay and at the mouths of the Indus spoke Dravidian tongues, and the Aryan Sanscrit and the dialects derived from it were unknown to the country traders. But before a foreign trade began, numerous var must have been developed, and the development of

these varieties, with the culture and agricultural skill necessary for their preservation, must have required a vast lapse of time, to be numbered by hundreds if not thousands of years.²⁰⁹

In Strabo we find : " They (Nearchos and Aristoboulos) add that the land, while still but half dried is sown, and though scratched into furrows by any common labourer, it nevertheless brings what is planted to perfection, and makes the fruits of good quality. Rice, according to Aristoboulos stands in water, and is sown in beds. The plant is four cubits in height, has many ears, and yields a large produce. The time of its ingathering is about the Pleiades, and it is husked in the same way as barley...Megillos says that rice is sown before the rains, and that it does not require to be irrigated and transplanted, as it is supplied with abundance of water. "²¹⁰ We read in a Pali book : " Just, O king, as the rice field is provided with canals for irrigation...and, again O king, just as the rice field is provided with embankments whereby men keep the water in, and so bring the crop to maturity... And again, O king, just as the rice field is fruitful, filling the heart of the farmer with joy, so that if the seed be little, the crop is great, and if the seed be much the crop is greater still. " ²¹¹

Wheat was another important species of grain cultivated here. Mr. Schoff thinks that wheat was introduced into India from Egypt. But according to Mr. Jayaswal the evidence of languages is against this view. It came from Persia or from Mesopotamia through Persia. Its name - Godhuma is identical with the Persian Gandum.

Many other agricultural products—both cereals and others—are mentioned. We are told that those crops are noble ones which very slowly come to maturity, and not those which have a meteoric career. “Just, O king, as in the west country, the kind of corn called kumuda-bhandika, ripening quickly and being garnered in a month, is called masalu (got in a month,), but rices only come to perfection in six months or five. What then is the difference, what the distinction between kumuda-bhandika and rice! The one is a mean plant, O king, the other a grand one. The rices are worthy of kings, meet for the king's table, the other is the food of servants and slaves.”²¹² Kautilya mentions the following products as essential parts of every State store-house. Clarified butter, oil, serum of flesh, and pith or sap (of plants etc) are termed oils. Decoction (phanita), jaggery, granu-

lated sugar, and sugar - candy are termed kshara-Saindhava, that which is the product of the country of Sindhu ; Samudra, that which is produced from sea-water ; Bida ; yavakshara, nitre, Sauvarchala that which is the product of the country of Suvarchala and Udbhedaja, that which is extracted from saline soil are termed lavana, salt. The honey of the bee as well as the juice extracted from grapes, the essence of jambu, and of jaka tree - with the essence of meshshringa and long pepper, with or without the addition of chirbhita (a kind of gourd), cucumber, sugar - cane, mango - fruit and the fruit of myrobalam, the mixture being prepared so as to last for a month, or six months, or a year, constitute the group of astringents. The fruits of those trees which bear acid fruits, those of karmarda, those of myrobalam, those of citron tree, those of small jujuba as well as big jujuba are all acid fruits. Curds, acid prepared from grains and the like are acids in liquid form. Long pepper, black pepper, ginger, cumin seed, are pungent substances. Dried fish, bulbous roots, fruits and vegetables are the group of edibles. Timber, bamboo, cane are some important forest products; they are the raw material of wooden and bamboo and cane industries. Among other important forest products are the plants

which yielded rope - making material, or flowers or leaves ; poisons ; skins of various animals ; bones, teeth, horn, tails of animals ; and such other things. ²¹⁴

The preparation of juices of many varieties was a flourishing industry. " Those men who having themselves manufactured juicy drinks of sweet taste... make gifts of them unto others, succeed in ascending to heaven. " ²¹⁵ " I allow you, O Bhikhus, eight kinds of drinkable things : mango syrup, and jamb - syrup, and plaintain - syrup, and honey, and grape - juice, and syrup made from the edible root of the water lily... I allow you, O Bhikhus, the juice of all fruits except the juice prepared from corn. I allow you... drinks prepared from all leaves, except liquorice - juice. I allow you... the use of the juice of sugar cane. " ²¹⁶

The Shukraniti refers to a number of agricultural products, pointing out their uses. Rice, wheat, barley, pulses, chanah (or gram), masura (lentil), mudga (green gram), harimantha (peas), kulatha (horse gram) - are referred to. Saktu made of gram and other pulses was also an excellent food for horses, just like other pulses. Mustard is referred to as a very small substance. ²¹⁷ About tila or

sesamum, Birdwood writes ; " The phrase Open Sesame is from the Indian oil seed, tila - sesamum indicum, the cultivation of which was carried in the earliest ages into Mesopotamia and Egypt, where it became known under the name of Semsen ; and 'open sesame' is equivalent to 'Bring in the candle,' 'Light the gas,' bring light which opens everything which neither wheat nor barley could give Kassim, but only the oil seed sesamum. " ²¹⁸

Shukracharya mentions some other plants. Sugarcanes are the plants which give rise to one of the 64 arts. " Sugar was introduced into Europe by the Saracens and through the crusades... All the European names for sugar are derived from Sanscrit Sharkara, through the Arabic Shakar, the Hindi name of sugar... Undoubtedly sugar was made from time immemorial in India... Nearchus thus quoted by Strabo (xv. 1. 20) says that in India ' reeds yielded honey, although there are no bees, " ²¹⁹ Another product was that of bamboo. It gave rise to an art-the preparation of vessels with leaves and straws of the plant. Tula or cotton is mentioned. The Sanscrit word for it was Karpasa, Gk-Karpasos, Latin Carbasus ; Hebrew Carpas. It was native in India. Prof. Sayce in his Hibbert lectures shows

ground for the belief that it was exported by sea to the head of the Persian Gulf in the 4th Millennium B. C. and it found its way very early to Egypt.²²⁰ Indigo is a very old Indian product. Its presence according to Wilkinson has been detected in the tombs of Egypt. Among the narcotic plants mentioned are betel and ganja. To prepare and preserve betels was an art which deserved the State patronage. Betel leaf plays an important part in the social life of India; and the trade in betel is mentioned by Periplus. Tobacco and poppy have not been mentioned.

The Greek writers refer to various agricultural products of India. *Cotton*. "And certain wild trees there bear wool instead of fruit, that in beauty and quality excels that of sheep; and the Indians make their clothing from these trees."²²¹ Megasthenes also notes the fact that the country has trees upon which wool grows.²²² Ktesias also refers to garments produced by trees, which can only mean cotton garments.²²³ *Ebony*. Strabo writes: "Ebony grows there."²²⁴ Virgil comments upon this. "India alone produces ebony. The author of the Periplus of the Erythrean sea states that logs of ebony were exported from Barygaza to the marts of Omana and

Apologos." *Pepper*. The pepper plant grows everywhere in India. ²²⁵ It was in ancient times produced chiefly in those parts of India which adjoin the Malabar Coast. *Lycion* was exported from Barbaricon, a port at the mouth of the Indus, and from Barygaza on the Nerbudda. It is a thorny plant the juice of which was used for dyeing yellow, while a liquor drawn from it was used as a medicine. ²²⁶ *Sugar*. Arabia too produces sugar ; but the Indian kind is more esteemed. It is a honey collected in reeds, white like gum, and brittle to the teeth. ²²⁷ *Bdellium*. is the gum of a tree which grows in Sindh, Kathiawad, and the Disa district. It is used both as an incense and a cordial medicine. It was exported from Barbaricon and Barygaza. ²²⁸ *Costus* (Sk. Kushtha) was considered the best of the aromatic roots. It was one of the exports of Barbaricon and Barygaza. ²²⁹ *Nardus* was a famous unguent, found in the mountainous parts of India. Cardamomum was the same as cardamum. The *cocconut-tree*. It is said that the fruits of the Indian palms are called nuts, but they are three times as large as the Babylonian. ²³⁰ The Indian *reed*, Ktesias reports, grew on the mountain regions on the Indus, and is so thick that two men with outstretched hands cannot span it round, and that it is as

high as the mast of a large ship.²³¹ There were male and female reeds, the latter had a pith and the former had none. Small boats were made of them which could hold not more than three men.²³² *Parebos* was a tree found only in the garden of the king; its root attracted everything to itself such as metals, and birds, and also sheep. It also served as a medicine against bowel disturbances.²³³ Sesame comes from India, where they extract oil from it. It is of a white colour.²³⁴ *Indigo*—the Indikon Melan of the Periplus and the nili of Sanscrit yielded one of the principal dyes. The culture of the indigo plant and the preparation of this drug have been practised in India from a very remote period. “ Both Aristoboulos and other writers relate that India produces many medicinal plants and roots, both of a salutary and a noxious quality, and plants which yielded a great variety of dyes. ”

8 Famine and Poor Relief.

It is certain that Megasthenes carried a very high opinion about the agricultural resources of India and put it on record that India was a stranger to famine. Here is his account:—India has many huge mountains which abound in fruit trees of every

kind, and many vast plains of great fertility - more or less beautiful, but all alike intersected by a multitude of rivers. The greater part of the soil moreover is under irrigation, and consequently bears two crops in the course of the year. ... In addition to cereals, there grows throughout India much millet which is kept well watered by the profusion of river streams, and much pulse of different sorts, and rice aloes, and what is called *bosporum*, as well as many other plants useful for food, of which most grow spontaneously... It is accordingly affirmed that *famine has never visited India*, and that there has never been a general scarcity in the supply of nourishing food. For, since there is a double rainfall in the course of each year, - one in the winter season, when the sowing of wheat takes place as in other countries, and the second at the time of the summer solstice, which is the proper season for sowing rice and bosporum, so also sesamum and millet; the inhabitants of India almost always gather in two harvests annually; and should one of the sowings prove more or less abortive, they are always sure of the other crop. The fruits, moreover of spontaneous growth, and the esculent roots which grow in marshy places and are of varied sweetness, afford abundant supply for man. The fact is, almost

all the plains in the country have a moisture which is alike genial, whether it is derived from the rivers, or from the rains of the summer season But further, there are usages observed by the Indians which contribute to prevent the occurrence of famines among them ; for whereas among other nations it is usual, in the contests of war, to ravage the soil, and thus to reduce it to an uncultivated waste ; among the Indians, on the contrary by whom husbandmen are regarded as a class that is sacred and inviolable ; the tillers of the soil, even when battle is raging in their neighbourhood...are undisturbed by any sense of danger..... Besides, they neither ravage an enemy's land with fire, nor cut down its roots India again possesses many rivers both large and navigable..... Besides these rivers (the Ganges and the Indus) there are a great many others of every description, which permeate the country, and supply water for the nurture of vegetable gardens and crops of all sorts. The reason given is that the surrounding countries are more elevated than India and hence waters generally flow downwards.²³⁵ Megasthenes thus does not merely state the fact dogmatically but also tries to account for it in his own way. The

fertility of soil, the spread of irrigation works, the presence of big rivers; the institution of two harvests every year, and the immunity of the agricultural class from military ravages; all tended to account for the comparative freedom which India must have enjoyed from dreadful famines.

Yet it is absurd to deny that here and there conditions prevailed which resulted in a shortage of food. The absence of rains was the main cause of famines. But they were often due to the excess of rains too. In fact *anavrishiti* and *ativrishiti* were the two main causes of famines. But often the crops used to be destroyed by hail-storms or by an invasion of locusts, or by some such cause. “ ‘ And have you ever heard O king, of a young crop that, after it had come to ear, worms spring up, and destroyed down to the roots ! ’ ‘ We have both heard of such a thing, Sir, and have seen it too. ’ ” “ And have you ever heard, O king, of a crop that had grown, and was bent down by the weight of the grains of crop, the ears having duly formed, when a so-called karaka rain (hail-storm) falling on it, destroyed it. ’ ‘ We have both heard of such a thing, Sir, and have seen it too. ’ ” ²³⁶ The

cultivators had to take various precautions to safeguard the crops. "Towards harvest-time in Magadha, when the crops stand thick in the fields it is dangerous for the deer in the forests round. Anxious to kill the creatures that devour their crops, the peasants dig pitfalls, fix stakes, set stone-traps, and plant snares."²³⁷

Ancient literature is replete with references to famines: although light is wanting as regards the nature and extent of famines in those days. The first famine cry comes from the most ancient records of India:—"The waters of the upper sea in heaven were prisoned by the gods; but the wise priest released them all (removed the drought and wet the sods). He, praying, sang that magic verse; the rain-compelling voice had he, God, free us from the Hunger-ill and give that magic word to me--let loose for us on earth the rain--the waters of yon heavenly sea!" "O Indra give food and strength to us who are hungry. Help us with the help, powerful god, save us from this (present) plague, hunger, and wretchedness. Indra, do thou keep drought and hunger from our pasture." "The gods did not give hunger as the only death." In the Ramayana we read of a famine in the kingdom of

Anga. The king Lomapada was guilty of a falsehood towards a Brahmin. And Indra suddenly abstained from giving rain in his territory ; so that his people began to suffer.²³⁴ A terrible famine is reported in the pages of the Mahabharata. " Towards the end of Treta and the beginning of Dvapara, a frightful drought occurred, extending for twelve years...not even a dew drop could be seen, what need then be said of clouds gathering together ? The rivers all shrank into narrow streamlets. Everywhere lakes and wells and springs disappeared and lost their beauty. Water having become scarce, the places set up by charity for its distribution became obsolete... Agriculture and cattlekeeping were given up. Markets and shops were abandoned. Everywhere heaps of bones were visible and every place resounded with shrill cries and yells of fierce creatures. The cities and towns of the Earth became empty of inhabitants. Villages and hamlets were burnt down. Some afflicted by robbers, some by weapons, and some by bad kings, and in fear of one another began to fly away. Temples and places of worship became desolate. They that were aged were forcibly turned out of their houses. Kine and goats and sheep and buffaloes

fought (for food) and perished in large numbers. The Brahmins began to die on all sides. Protection was at an end. Herbs and plants were dried up. The Earth became shorn of all her beauty and exceedingly awful like the trees in a crematorium. In that period of terror when righteousness was nowhere, O Yudhishtira, men in hunger lost their senses and began to eat one another."²³⁵ The fact that the Hindu sages narrate in full details, the list of professions open to all the castes in adverse times shows that such times were now and then experienced. We are also told that in times of very great scarcity all ordinary moral rules are to be suspended, and the most forbidden things become allowable. ' The hungry sage Ajagartah, for having attempted to kill his son (Shunahshepa) in order to appease his hunger, was not associated with the sin (of child - killing). The famished Vamadeva, the knower of sin and virtue, for having wished to eat dog's flesh in order to avoid death from starvation, was not associated with the sin (of eating dog's flesh). Oppressed by hunger in a lonely forest, the (holy Bharadwaja of great austerity, together with his son, was not associated with the sin (of taking vile gifts) for having accepted the gift of a large

number of kine from Vridhu who was a carpenter. Oppressed by hunger, the holy Vishwamitra, the knower of merits and demerits, for having accepted the gifts of the flesh of a dog's thigh from the hand of a Chandala, was not associated with sin."²⁴⁰

In the Jatakas we find many allusions to the operations of famines in the northern India. "There was a drought in the land of Kosala; the crops withered; water gave out in tank and pool; and the fishes and the tortoises buried themselves in the mud."²⁴¹ "In those days there came a great drought upon the Himalaya country, and everywhere the water was dried up, and sore distress fell upon beasts."²⁴² "Sakka, for the space of three years stopped rain from falling in the kingdom of Kasi, and the country became as it were scorched up, and no crop came to perfection, the people under the stress of famine gathered themselves together in the palace yard and reproached the king."²⁴³ At one time, all the grain had been carried away during the rainy season, and there was a famine. But it was the time when the corn had just sprouted, and all the villagers came together, and besought help of their headman, saying: "Two months from now, when we have harvested the grain, we will pay you in kind."²⁴⁴

The visible causes of famine are scarcity or excess of rain, the visitation of storms, the invasion of locusts and so on. But the Hindus read in famines the signs above all of divine wrath. The famines like all natural calamities mean the moral and religious breakdown of humanity in that portion of the earth. And as governments were held responsible not only for the people's prosperity and health, but also for their moral and spiritual life, in the last resort the famines were attributed as a rule to some dereliction on the part of kings. राजा कालस्य कारणम् । The policy of the State was the fundamental ground for the health as well as the diseases of the body politic. Thus we are told in the Gita that "Men depend upon food for their subsistence ; food depends upon the rains ; the rains depend upon the regular performance of Yajna (duty - sacrifice) (on the part of the people), and the Yajna is born of Karma (or moral life of man)." ²⁴⁵ This belief animates all accounts of famines in early literature. The root cause of all of them is the practice of or connivance at unrighteousness on the part of the kings. The remedy therefore often is the pacification of the higher powers by means of penances etc. Famines are not therefore economic phenomena pure and simple but

ethical phenomena as well, suggesting not merely the presence of disease in the economic structure of society, but also in the moral life of the community. " If a king be unrighteous, God sends rain out of season, and in season He sends no rain ; and fear of famine, fear of pestilence, fear of the sword — these three fears come upon men from him. " ²⁴⁶ Once there was a drought in the kingdom of Kalinga ; the corn grew not, there was a great famine, and men being unable to live practised robbery. Tormented by want, the people gathered in the king's courtyard and upbraided him. Then the king kept holiday vow for seven days, and yet it did not rain. At last an elephant of a king devoted to charity was brought in and it rained. ²⁴⁷ At another time there was a famine in the city of Dantapura in the kingdom of Kalinga, owing to the absence of rains. The people wandered about destitute hither and thither, leading their children by the hand. All the people then gathered together and went to Dantapura and made an outcry at the king's door. The king asked why the people were making all that noise. " Oh Sir, " was the reply, " three fears have seized upon all your kingdom; there fell no rain, the crops fail, there is a famine. The people starving, diseased, and desti-

tute are wandering about with their little ones by the hand. Make rain for us, O king ! ” Said the king “ What used former monarchs to do, if it would not rain ? ” “ Former monarchs, O king, if it would not rain, used to give alms, to keep the holiday, to make vows of virtue, and to lie down seven days in their chambers on a grass pallet, then the rain would fall. ” ²⁴⁸

Yet we find that the ancient kings did not omit to take all the preventive as well as the remedial measures against this dire calamity. An extensive system of irrigation, a mild and elastic system of revenue administration, an active encouragement of agriculture as well as arts and industries, were sufficient in normal times to prevent the outbreak of famine. We have already referred to the storage of grain in ordinary times as a safeguard against unexpected demands upon food reserves in times of distress. This was a very beneficent institution and in most cases sufficed to meet the exigencies of the situation. “ Of the store, thus collected, half shall be kept in reserve to ward off the calamities of the people and only the other half shall be used. ” ²⁴⁹ It was clearly realised that the agricultural classes formed the

backbone of the community and they must be therefore duly protected by the State. "The bold peasantry, their country's pride, when once destroyed can never be supplied." "If the king disregards the Vaishyas, they become lost to him, and abandoning his dominions remove themselves to the woods. The king should therefore behave with leniency towards them. The king, O son of Pritha, should always conciliate and protect the Vaishyas, adopt measures for inspiring them and for ensuring them in the enjoyment of what they possess and always do what is agreeable to them. The king, O Bharata, should always act in such a way that their productive powers may be enhanced. The Vaishyas increase the strength of a kingdom, improve its agriculture, and better its trade."²⁵⁰ The State was also called upon to grant loans to the cultivators when they were hard pressed.²⁵¹ Above all, the conservation of forests rendered a great service to the cause of agricultural prosperity. "The wood doth guard the tiger, as the tiger guards the wood."²⁵² The tiger guarded the wood, and in guarding it saved the Hindu for many centuries from drought and famine. "His place in the economy of Hindu civilization was to keep man and man's destruc-

tive axe out of the great reservoir of rain, the primeval forest." ²⁵³ Above all, there were so many home industries flourishing in the country, that the villagers could and did always take up one of these and that was surely a second bow in the string of the cultivator. The absence of rapid means of communication in those days while it was a handicap in some ways, was a blessing in another, way. It was not possible for supplies to be sent at a moment's notice to any place : and scarcity could not be prevented over restricted areas for a short time. But at the same time there was no general exportation of food to other countries, and hence the plenty of one year would relieve the scarcity of another year. However, when there was a continuous shortage of rains for more than one year, famine could not altogether be averted. Then the remedial operations would come into play. " During famine, the king shall show favour to his people by providing them with seeds and provision. He may either do such works as are usually resorted to in calamities ; he may show favour by distributing either his own collection of provisions or the hoarded income of the rich among the people ; or seek help from his friends among kings. Or the policy of thin-

ning the rich by exacting excessive revenue, or causing them to vomit their accumulated wealth may be resorted to. Or the king with his subjects may emigrate to another kingdom with abundant harvest. Or he may remove himself with his subjects to seashores or to the banks of rivers or lakes. He may cause his subjects to grow grains, vegetables, roots, and fruits wherever water is available. He may, by hunting and fishing on a large scale, provide the people with wild beasts, birds, elephants, tigers, or fish.”²⁵⁴ The following is the story of a village which suffered from famine :—In A. D. 1054, the village of Alangundi (in the Tanjora district) appears to have been afflicted with a famine caused probably by failure of rains. The villagers had consequently no funds to purchase paddy for their own consumption or seed grains and other things necessary for cultivation. Whatever the cause, the famine-stricken inhabitants of Alangundi could expect no help in their distress from the royal treasury. They had to shift for themselves as best as they could. Accordingly, they applied to the local temple treasury from which they obtained 1,011 *Kalanju* of gold and 464 *palam* of silver, consisting of temple jewels and vessels. In exchange for this,

the members of the village assembly alienated $8\frac{1}{2}$ Veli of land in favour of the god. From the produce of this land the interest on the gold and silver received from the temple was to be paid. ²⁵⁵

III Arts and Industries.

I

Textile Industry.

The earliest civilisation in India of which we have a record was the pastoral civilisation : and in the Rigveda we find it was about to give way to the agricultural stage of development. It is therefore idle to look for any very great progress in arts and crafts in the Vedic India. Yet the earliest beginnings of everything are to be traced to the Vedic India : and arts and crafts are no exception to the rule.

1 Spinning and Weaving :

A criterion of a nation's progress from barbarism to civilisation is the progress it has made in the arts of clothing. Man like animals, begins his career in the state of nature : but as long as he has not emerged from this stage of primitive simplicity and

idyllic innocence and begun to cover himself with something - it may be skins of animals or barks of trees in early days - he cannot be said to have left behind him the stage of barbarism. We are glad therefore to find that the Vedic Indians had already developed to considerable perfection the art of dress ; and the industries of spinning and weaving - the most universal and the most characteristic industries of India upto to - day - had obtained a firm footing among them. The continuity of one's line is often compared to the continuity of a thread. " As fathers, they have set their heritage on earth, their offspring, as a thread continuously spun out."¹ " Over the heights they have attained the highest thread that is spun out."² A triply twisted thread is referred to in one passage. " He hath assumed the rays of Surya for his robe, spinning, as he knows how the triply - twisted thread (i. e. bearing his part in morning noon and evening sacrifice,). "³ " Spin out the ancient thread for him who sheds, with gifts, the Soma juice. "⁴ " Gods span sacrifice that stirred the mind."⁵ The thread spun by Yama is referred to⁶. Hymns are often woven by priests. " Hymns, only Hymns, with love for thee, I weave thee."⁷ " When they adorn him (Soma)

duly weaving sacrifice."⁸ It must have been a familiar experience to Hindu weavers to have their threads eaten by rats at night. "As rats eat weavers' thread, cares are consuming me."⁹ "Ye weave your songs as skilful men weave garments."¹⁰ "They the refulgent sages weave within the sky yea, in the depths of the sea, a web for ever new."¹¹ "Night and day inter-weave, in concert, like two female weavers, the extended thread to complete the web of the sacrifice."¹² Night is again described as "enwrapping the extended world like a woman weaving a garland."¹³ We read of the fathers, who "wove and placed the warp, and the woof."¹⁴ "I know not the warp, and the woof I know not."¹⁵ But in a remarkable passage we are made to witness the whole scene with our own eyes as it were. "The sacrifice drawn out with threads on every side, stretched by a hundred sacred ministers and one, this do these fathers weave who hitherward are come: they set beside the warp and cry, weave forth, weave back. The man extends it and the man unbinds it: even to this vault of heaven hath he outspun it. These pegs are fastened to the seat of worship: they made the Soma hymns their weaving shuttles."¹⁶

2. Technical terms :

The word *tantu* is used for thread, and in some passages it means the warp of a piece of weaving. The warp is called *anuchada* or *prachina tana* elsewhere.¹⁸ In the Kaus. Up. the threads or cords of the throne are called *paryanka*.¹⁹ The technical term for "woof" is *otu*, and corresponds to *tantu* - warp.²⁰ The former is derived from *va* to weave; and the latter from *tan* to stretch. The term for a spindle was *Tarku*. (Nirukta ii. 1.) The shuttle was used in the process of weaving. It was called *tasara*.²¹ The term for a weaver was *vaya*,²² and for the loom, *vaman*.²³ A wooden peg was used to stretch the web on, while a lead piece was employed to extend it. It was called *Mayukha*.²⁴ A six - pegged web is referred to in a metaphor. "A certain pair of maidens of diverse forms, weave, betaking themselves to it, the six - pegged web : the one draws forth the threads (*tantu*), the other sets (them); they wrest not off; they go not to an end." ⁵

3. Dress :

The existence and strength of the textile industry is proved not only by passages alluding to processes of weaving and spinning, but also by

passages testifying to the progress of dressing and
 adorning one's bodies among the Vedic Aryans. The
 sun is the "weaver of garments;" ²⁶ because of
 his connection with the fashioning of forms. "So
 Agni stands...invested in well-decorated garments."²⁷
 "Raiment is body; food is life; and healing oint-
 ment giveth strength." ²⁸ "Pour on us garments
 that shall clothe us neatly."²⁹ "Robed in garments
 fair as heaven to look on." ³⁰ "As maidens deck
 themselves with adornment to join the bridal feast."³¹
 "Loving wives decked themselves to please their
 spouses."³² "With their breasts, hips, and heads
 quivering with passion." ³³ Usha is described as
 "exhibiting her person like a well-attired female,
 she stands before our eyes, gracefully inclining like
 a woman who has been bathing." ³⁴ "She like a
 wife desirous to please her husband puts on becom-
 ing attire, and smiling as it were displays her
 charm."³⁵ The garments were often embroidered.
 "She like a dancer, puts her brodered garments on,
 as a cow yields her udder, so she bares her
 breast." ³⁶ The word Peshas ³⁷ meant an embroi-
 dered garment such as a female dancer would wear.
 The Maruts are described as putting on mantles
 adorned with gold. ³⁸ A gold cloth or brocade of
 gold is distinctly mentioned. ³⁹ In one hymn to

Indra, we find, "Elegant well-made garments, as being fit to be received as a respectful present." Wilson remarks on this that "If the rendering be correct, this shows the custom of presenting honorary dresses to be of Indian origin and of considerable antiquity."⁴⁰ A priest says "I have received from Divodas ten horses, ten purses, ten clothes, and ample food."⁴¹ The epithets like *su-vasana*, and *su-rabhi* show that the garments were well-fitting or well-made. As regards the types of dress, we get some information. Men put on three garments - an under garment called *Nivi*,⁴¹ a garment,⁴² and an upper garment, differently called in different passages, *vavri*, *parodhanam*, *adhivasa*, *atka*, *drapi*.⁴³ A turban or head-dress (*ushnisha*) is mentioned.⁴⁴

4. Stuff :

There is some room for speculation as to the material of which the clothing was made. "It is difficult to conceive," says Dr. Muir, "that cotton (which, as I learn from Professor J. H. Balfour, is supposed to have been indigenous in India) though not mentioned in the hymns, should have been unknown when they were composed, or not employed for weaving the light cloth which is necessary in so warm a climate."⁴⁵ And the develop-

ment of weaving industry also implies that there must have been some material adapted to weaving. There are many references to wool in the Vedic literature. "Weaving the raiment of the sheep and making raiment beautiful." ⁴⁶ The Parushni country was famous for its wool. "Wearing as wool Parushni for adornment." ⁴⁷ Parushni was one of the rivers of the Punjab, called in later times Iravati. "Fair gleaming, on Parushni, they have clothed themselves with robes of wool." ⁴⁸ The phrase "soft as wool" is of frequent occurrence. ⁴⁹ Urna was the term for wool, the sheep are called Urna-vati (wooly), ⁵⁰ woolen thread is called urna - sutra, ⁵¹ The spider is called urna - nabhi, because of its spinning threads of wool. ⁵² The woolen blankets were called Kam-balas. ⁵³ Silk does not seem to be known to the Vedic India : but the phrase "Kausambha paridhana," may mean "silken garment." ⁵⁴ Thus we have ample evidence to show that in the Vedic India the textile industry must have been of a very flourishing character. The Indians not only manufactured their own cloth, but were able to export much of it to foreign countries. "That the coloured cloth and rich apparel brought to Tyre and Babylon from distant countries, were partly Indian manufacture

will scarcely be doubted, after what has already said of Phœnician and Babylonian commerce."

5. Antiquity of the Textile Industry.

One of the greatest industries in those days was the textile industry. The word for cotton in Sanskrit is *karpasa*, which is probably of Sanskrit origin. Another word is *tula* and this word we find in the Upanishads. The evidence of Greek writers also confirms this. These writers repeatedly say that the Indians wear garments made of wool which grows on trees. Thus Megasthenes writes: "Eratosthenes records the fact of there being trees on which wool grows." ⁵⁶ Cotton therefore may be an indigenous product of India. The word *Karpasa* is used in the *Manu Smriti* as well as the *Mahabharata*. It is also found in the Bible - it is there the Hebrew word *karpas* and is evidently derived from the Sanskrit *Karpasa*: "where were white and blue cotton (*karpas*) hangings." ⁵

This is further confirmed by the fact that the weaving industry is the oldest industry in India. The art manufacturing cotton into cloth by the use of the spinning-wheel and the loom is an ancient art in India. We have already noticed the references to weaving in the Vedas:

and the words tantu, otu, tasara, mayukha, tarku, point to the perfection of the weaving and spinning processes in the Vedic India. In later times, these processes must have been carried to greater perfection. We will find that there are not only allusions to the loom, but also to the variety of cloths which amply confirm our position. "Numerous thin threads of equal length, collected together, are competent to bear, from strength of numbers, the constant rolling of the shuttlecock over them. The case is so with relatives that are good." ⁵⁸ Mr. Vaidya well says :- "The spindle and the loom were used in India thousands of years ago and those have only been developed in modern times to enable the application of steam power to their working. The principle remains the same and whoever were the Hargreaves and Cartwrights of the ancient world they were undoubtedly the benefactors of mankind. The weaver was a well-recognised member of the Indian society from historic days and the *pata* and the *tantu* have furnished illustrations to philosophers from unknown times."

The art of manufacturing cloth from cotton soon reached a degree of refinement. Megasthenes

testifies to the Hindus' love of gay dress. "In contrast to the simplicity they observe in other matters, they love finery and ornament. They wear dresses worked in gold, and adorned with precious stones, and also flowered robes made of fine muslin."⁶⁰ The Bharukachha men are mentioned as bringing slave girls clad in cotton clothes. Broach might have been a well-known centre of cotton industry.⁶¹ The Pandya and Chola people are reported to have brought as presents for Yudhishtira "fine cotton clothes inlaid with gold."⁶² Cotton cloth is frequently referred to in the Manu Smriti.

6 Origin of names :

It is an interesting study to inquire into the origin of the names of some of these varieties of cloth. Very often they derive their names from the place which gave birth to them. Thus the word Baudekin is derived from Baghdad, Damask from Damaskus, Satin from Yatown in China, Sindon, Syndon, Sendal, Cendatus, from Sindh, Calico from Calicut and Muslin from Mosul. Chintz is derived from chint or chete, Hindu words for variegated, whence chita. Shawl is the Sanskrit shala, a floor, a room, because

shawls were first used as carpets, hangings, and coverlets. ⁶³

7 Wool and Silk :

Manufacture of woolen and silken stuffs was also an equally flourishing business. Wool was a familiar thing to the Vedic India. But silk is a novel importation. Probably silk was introduced into India from China about the fourth century B. C. "The seric fabrics were silk webs imported from the Northern provinces of China. The first ancient author who refers to the use of silk is Aristotle. It may be inferred from what he states that silk in the raw state was brought from the interior of Asia, and manufactured in Kos as early as the fourth century B. C." ⁶⁴ The Sanskrit word for silk is Chinansuka, a cloth made in China : and China was believed to be the ancient home of silk industry, as India was of cotton industry. Whatever may be the precise date of its importation, it is certain that silk industry as well as woolen industry must have been well-established very early in India, as references to silken as well as woolen articles are abundant in the epics, the law-books, and the Buddhist writings. Panini has words not only for wool,

cotton, weaving, cloth, turbans etc but also for silk. कोशाइट्ठ । कोशसम्भूतं कौशेयं वस्त्रं । Kausheya is the name for silk because it is born of the kosha or cocoon. The dower given by Janaka to Sita consisted of "woolen stuffs, furs, precious stones, fine silk, vestments of diverse colours, princely ornaments, and sumptuous carriages of every kind." ⁶⁵ Manu refers to all types of cloth-woolen, cotton silken stuffs, among the rest. "Dresses made of the threads of silkworm cocoons (Kausheya) and stuffs made of sheep's wool must be purified with alkali...Cloths made of flax and jute twists must be purified with Bilva fruit, while those made of bark twists must be purified with mustard seeds." ⁶⁶ Theft of silk and cotton stuff is alluded to. ⁶⁷ Yet the profession of dealing in woolen stuffs must have fallen into disrepute, because it was not allowed to the Brahmins, ⁶⁸ and its use was relegated to the members of the third caste. ⁶⁹ Among the presents sent on the occasion of the Rajasuya sacrifice to Yudhisthira by various peoples are mentioned : "clothes and ornaments of celestial make, silks of celestial texture, and skins of celestial origin," from the Northern Kurus ; "innumerable skins of best kinds and blankets made of wool of the soft fur of mice,

and animals living in holes, of the hair of cats, all inlaid with threads of gold," from the kings of Kamboja ; " skins of the Ranku deer " from the Shudra kings ; " numerous blankets of woollen texture, manufactured in China and numerous skins of Ranku deer, and cloths manufactured from jute and others from the threads of insects...other cloths not made of cotton, possessing the colour of lotus...all of smooth texture...soft sheep's skins by thousands " from the Valhikas.⁷⁰ In the Vishnu Smriti there are allusions to silk, wool, (blankets) made of the hair of the mountain-goat, clothes made of the bark of trees, linen cloth, (rugs or covers) made of deer's hair, skins (of antelopes), ropes and woven cloth made of bamboo.⁷¹

8 Refinement:

The textile industry was developed both on an intensive as well as an extensive basis : and it gave birth to quite a variety of products made of cotton, wool, or silk. Birdwood writes : " Its marvellously woven tissues and sumptuously wrought apparel have been the immemorial glories of India. India was probably the first of all countries that perfected weaving and the art of

its gold brocades and filmy muslins." Blankets and rugs and coverings of wool and silk are referred to in the epics and the law-books. For a Bhikkhu to have "rugs of mat made with silk," "rugs of mat made of pure black-wool," "rugs of mat made of white wool, and tawny wool," was an offence.⁷² Manu refers to blankets made in Nepal.⁷³ The royal personages in the Jataka stories are dressed in silken stuff. "And the king to show that he accepted it put off his silken garments and put on the suit of clothes that he had brought him. The queen also laid aside her silken dress and ornaments."⁷⁴ Silk industry seems to have its greatest home in Benares. "Benares cloth has been their dress or linen hitherto, if they must dress in grass of bark what will the children do?"⁷⁵ "The great king dressed himself putting off his Kashi robe worth a hundred thousand pieces of money."⁷⁶ "With earrings, aloes, sandal-wood, in Kashi silk of costly price, see Chanda, Suriya, yonder led as victims to the sacrifice...Bathed and perfumed with richest scents and with white robes of Kashi dress."⁷⁷ In one passage we find a variety of clothes mentioned: We are told that the Bhikkhus were in the habit of using lofty and large things

to recline upon, that is to say, large cushions, coverlets with long fleece; counterpanes of many colours; woolen coverlets, white or marked with thick flowers, mattresses, cotton coverlets, dyed with figures of animals, rugs with long hair on one or both sides; carpets inwrought with gold or with silk; large woolen carpets such as the nautch girls dance upon, rich elephant housings, horse rugs, or carriage rugs, panther or antelope-skins, couches covered with canopies, or with crimson cushions at both ends.⁷⁸ Very costly woolen or silken stuffs were often presented as gifts by the Kings or by the rich merchants to those with whom they were pleased. Thus the king of Kashi gives to a physician, "a woolen garment made half of Benares cloth."⁷⁹ "At that time Paggota had a suit of Siveyyaka cloth. (i. e. a cloth woven from yarn which skilful women in the Sivi country spin), which was the best and the most excellent and the first and the most precious, and the noblest of many cloths and of many suits of cloths and of many hundred suits of cloth, and of many thousand suits of cloth."⁸⁰ A merchant says to Nagasena: "Now I have here a rare piece of woolen stuff sixteen cubits by eight. Do me the favour of accepting it."⁸¹ The author of

the Periplus also notices a variety of muslins; wide Indian muslins called Monakhe, muslins in single pieces, coarse muslins and some other coloured muslins and some finest types of muslins. It is evident therefore that the finest varieties of Dacca muslin which we know must have been largely produced then. "The fine muslins have received poetic names such as 'running water,' 'woven air,' 'evening dew,' the last because the muslin laid on wet grass could hardly be seen. Pieces of 15 yards by 1 have been produced weighing only 900 grains: the finest yarns may be worth as much as 3 £. 3 s. an ounce." ⁸² Women in high classes were in the habit of putting on very soft and coloured woolen and silken garments: the terms used are सूक्ष्मकम्बलवासिनी and पीतकौशेयवासिनी.

8 Textile Industry in Arthashastra :

In the Arthashastra varieties of woolen stuffs and skins are enumerated. Blankets made of sheep's wool are described as white, or purely red, or red as a lotus flower. They are prepared in various ways: either made of worsted threads by sewing, or woven of woolen threads of various colours, or made of different pieces, or woven of uniform woolen threads. Blankets of ten kinds are speci-

fied : Kambala (a coarse blanket), Kauchapaka (what is usually worn by cowherds), Kulamitika (head dress), Saumitika (a covering put over the hustings spread on the back of a bullock), Turagastarana (hustings spread on the back of a horse), Varnaka (a coloured blanket), Tulichchaka (a bed-sheet), Varavana (a coat), Paristome (a large blanket or hustings), and Samantabhadra (hustings spread on the back of an elephant). Of these the best is that which is slippery as a wet surface, soft and possessed of fine hair. Manu refers to blankets made in Nepal. Kautilya confirms it. They were rain-proof coats, called Bhingisi and Apasaraka. Trousers (Janghatrana) called Samputika, were prepared from the wool of wild animals ; so also curtains, carpets, and very long colourless blankets.

Vanga (Bengal) was famous for the manufacture of a white and soft fabric, called dukula. The Pandya country was famous for the manufacture of a black fabric as soft as the surface of a gem ; and the fabrics of Suvarnakundya were as red as the sun, as soft as the surface of the gem, and of uniform or mixed texture. There were also varieties in size of these stuffs ; single, half, double, treble, and quadruple goods.

There were other stuffs called Kashika, Benarese products, and Kshauma manufactured in Pandya.

The fibrous garments were the products of different places : Magadhika, Paundraka, and Suvarnakundyaka. These were made from the fibres of various trees such as Vakula, Likucha, Nagavriksha and Vata. Nagavriksha yielded yellow garments : Vakula white and Likuchi, whitish ones : but Suvarnakundya stuffs were considered the best.

Silk stuffs are referred to as Kausheya and Chinapatta, evidently referring to China, the home of silk industry.

Madhura, Aparranta (western parts), Kalinga, Kashi, Vanga, Vatsa (Kaushambi), Mahisha (Mahishmati) : these were famed for the production of cotton goods. ⁸³

The use of the skins of various animals in place of cloth was widely prevalent. Lion, tiger, and panther skins, we are told, " were cut to fit the chairs, and were spread inside or outside the couches or the chairs. " ⁸⁴ In the Southern country and in Avanti, sheep - skins, goat - skins,

deer - skins were used as coverlets.⁸⁵ Kautilya mentions a variety of skins. Kantanvaka skins were of the colour of the neck of the peacock ; Praiyaka skins were variegated with blue, yellow and white spots. Both these skins were eight angulas (inches) long. Bisi and Mahabisi were the products of a group of twelve villages on the Himlayas. Bisi skins were of indistinct colour, hairy and variegated. Mahabisi skins were rough and white. These skins were twelve inches long. Aroha a place on the Himalayas was famous for different species of skins : Syamika Kalika skins were brown: they were eight inches long. Kadali was rough and two feet long. Sakula was spotted like a deer's skin. Other skins were : Samura was black and thirty-six inches long : Chinasi was reddish black or bluish white : Samuli was of the colour of wheat. These were from the Himalayas. Satina, Nalatula, and Vrittapuchcha were the skins of aquatic animals ; they were either black or brown.⁸⁶

9. Dyeing :

What made the Indian textile fabrics more interesting was the variety of colours employed in dyeing them. " Soma endues his robes of lasting colours (rabhasani-brilliant)"⁸⁷ Sita received among

other things, garments of various colours.⁸⁸ A Snataka is asked to avoid all dyed dresses and all naturally black cloth.⁸⁹ Gautama also forbids him the use of dyed or sumptuous garments.⁹⁰ In the Mahabharata we read, "an uncoloured cloth when dirty, can be cleansed, but not a piece of cloth that is dyed with black, even so O king.....is the case with sin."⁹¹ In the Buddhist books we find many references to coloured cloth. "Some of the Likkhavis were dark, dark in colour, and wearing dark clothes and ornaments, some of them were fair, fair in colour, and wearing light colours and ornaments; some of them were red, ruddy in colour, and wearing red clothes and ornaments, some of them were white, pale in colour, and wearing white colours and ornaments."⁹² Among the exports we find in the time of the Periplus; "sashes striped with different colours, purple cloth, and muslins of the colours of mallows." Black colour is considered sacred to Saturn, yellow to Venus, and red to Mars, in astrological works. "The Hindu poets are very eloquent on the charming effects of a fair woman dressed in blue, likening it to that of a dark cloud lighted up by the radiant fire of beauty."⁹³ The hermits are required to wear robes of yellow ochre

colour ; and god Vishnu is called pitambera "clothed in yellow garments."

Now there is no doubt that these were vegetable dyes employed for the purpose of colouring textile goods. Here is a passage which throws some light on the preparation of these colours. " At that time the Bhikkhus dyed cloth with (cow) dung or with yellow clay. The robes were badly coloured...I prescribe, O Bhikkhu, that you use the following six kinds of dyes, viz. dye made of roots, dye made of trunks of trees, dye made of bark, dye made of leaves, dye made of flowers, dye made of fruits- " ⁹⁴ Some of the dyes were fugitive and others were fast. Thus not the least among the attractions of the Indian textile stuffs was the variety and brilliancy of their dyes. " Indeed the cotton tissues and stuffs of India have always been more sought after for the beauty and brilliancy of their natural dyes than for the fineness and softness with which they are interwoven. "

10. A Great Industry :

Such is in brief the achievement of the ancient Hindus in the field of textile industry. The " marvellously woven tissues and sumptuously wrought apparel " have been indeed the immemorial

glories of India. India which was once so famous for her cotton and woolen and silken goods, for her soft, fine and remarkably white, beautifully coloured, and magnificently embroidered stuff which was in demand all over the world, should again revive her national industry and resume her old position. Well does Birdwood say : " In consequence of the improvement of the national taste in this country, and the spread of higher education and culture among the natives of India, we may hope for a rapid increase in the demand for Indian hand - loom made, and artistically dyed and printed piece - goods. The true *couleur d'ivoire* is found naturally only in Indian stuffs. Nothing could be more distinguished for the ball - room, nothing simpler for a cottage, than these cloths of unbleached cotton, and their exquisitely ornamented narrow borders in red, blue, and green silk. *Indian native gentlemen and ladies should make it a point of culture never to wear any clothing or ornaments but of native manufacture, and strictly of native design.* " ⁹⁵

H

1. Tailoring :

The art of preparing made dresses had also a very early growth. It is true that the Indians

always require very little of clothing, but that does not mean that prior to the advent of the Mahomedans there was no art of tailoring in India. The existence of such words as *suchi* for needle and *sivan* for sewing shows that there were rudiments of the art of preparing dresses in those days. "May she sew the work with a needle that is not capable of being cut or broken, with one of which the stitches will endure."⁶ The tailors were called Suchika, or Sauchika or Suchaka. Ushanas says that the caste of tailors sprang from the union of Vaishyas and Shudra women. The use of such words as *ushni-sha*, *Kanchuca*, *angika*, *cholaka*, *chola*, *adhikanga*, *nivi*, shows that various types of garments were prepared : head - dresses, coat or jacket, bodice etc. The *nivi* means the tape with which the petticoat is tied round the waist. In the law - books, we find it repeatedly insisted on that men should be dressed properly, while women were usually required to be completely covered. "A man must neither bathe, nor sleep, nor rinse his mouth, whilst naked: he must not wash his mouth, nor perform any sacred rite, with his waistband unfastened ; and he must not offer oblations to fire, nor sacrifice to the gods, nor wash his mouth, nor salute a Brahmin, nor utter a prayer with only one garment on." ⁷

“ Women should always wear a sheet over their body - clothes. ” 98

2. Toilet :

There was further progress as regards the arts of personal decoration : and we find all the articles of toilet mentioned in the Sanskrit books, : the scents and perfumes, the mirror, ornaments, walking sticks, shoes, umbrellas. “ Or whereas some Samana Brahmans who live on the food provided by the faithful, continue addicted to the use of articles for the adornment of their persons. : that is to say, unguents, fragrant oils, perfumed baths : shampooings ; mirrors ; antimony for the eye-brows and eye - lashes ; flowers, cosmetics ; dentifrices ; bracelets, diadems, handsome walkingsticks, tiaras, swords, umbrellas, embroidered slippers, fillets, jewelry, fans of the buffalo - tails ; and long white garments. ” 99

Umbrellas were of two kinds; special and ordinary. The ordinary umbrellas were again of two kinds: according as it was *sadanda* or with a handle or *nirdanda*, handleless. The former could be opened and shut at pleasure. Its principal parts were the stem, sliding frame, ribs, threads, cloth, and pin. The stem, or handle, in a well-made umbrella, was

four cubits long, the sliding frame two spans, the ribs two cubits, and cloth twice the length of the ribs. The pin which supplied the place of the modern spring to lock the sliding frame is reckoned at eight fingers. Royal umbrellas were specially prepared with the stem and frame of choice wood, ribs of selected bamboo, thread and cloth of red colour. Such umbrellas were called *prasadas*. The *pratapa* umbrellas, specially suited to princes were made of a blue stem and cloth with a golden top and hinge. The *kanakadanda* umbrellas were made of sandal wood; while *Navadanda* were made of gold. The Agni Purana recommends the use of other materials besides cloth for the construction of royal umbrellas. " It is conducive to the good of princes to have their umbrellas made of the feathers of geese, or of peacocks, or of parrots, or of herons. "

The chamara or fly - flapper was another important of the royal insignia. It was often used by the rich people. Bhoja mentions two classes of this " the mountain - born, " and " the sea - born. " The chamara made of the hair of cattle on the Meru was of a deep yellow colour that of the Himalaya white, that of Vindhya white and dense, that from Kailasa black and white mixed, that from Malaya, white and yellow mixed. " The sea - born chamaras are

said to come from the seven Puranik seas, and marine animals bite the bushy part off from their tails and cast them on the shore, where fortunate people collect them." (See Yuktikalpataru. The Indo - Aryans).

3 Leather Industry;

Another ancient industry was the leather industry. Charman 'hide' is often referred to in the Vedas. The oxhide was employed in the manufacture of bowstrings, slings, and reins. It was spread underneath to catch and hold the droppings of the Soma which was pressed with the stones above. Leather casks were made for holding liquor or water. Skin - bags were also made of leather; shields were prepared of bullock's hide. Leather-guards were made for the hands of the archer, and lastly drums which were made of wood were bound with straps of leather. Leather work was called charmanya, The art of tanning hides is referred to in the Rigveda. The Shatapatha Brahmana refers to the stretching out of a hide with pegs.¹⁰⁰

But the most characteristic leather work was exemplified in the manufacture of shoes and boots. These were articles of common use and we find them mentioned so often. Rama's slippers were placed on

the vacant throne of Ayodhya in his absence; this shows that they were taken as important articles worthy of attention. Bharata said:

Put, noble brother, I entreat,
 These sandals on thy blessed feet :
 These, lord of men, with gold bedecked.
 The realm and the people will protect.
 Through fourteen seasons will I wear
 The hermit's dress and matted hair :
 With fruit and root my life sustain
 And still beyond the realm remain,
 Longing for thee to come again.
 The rule and all affairs of state,
 I to these shoes will delegate.

Manu asks a Brahmacharin to forswear the use of unguents, collyriums, shoes, and umbrellas.¹⁰¹ Shoes of another person should not be put on by a snataka. All persons who want to protect their persons are advised by the Vishnu Purana to be never without shoes.¹⁰¹ We have also the evidence of the Greek writers on this point. Thus Arrian says : " The Indians wear shoes made of white leather, and these are elaborately trimmed, while the soles are variegated, and made of great thickness, to make the wearer seem so much taller."¹⁰¹

A degree of refinement was introduced to add to the charm of shoes : and we find in a passage of the Buddhist writing an elaborate description of the types of shoes. " Now at that time Khabbagiya Bhikkhus were in the habit of wearing slippers all of blue, yellow, red, brown, black, orange, or yellowish colour,...wearing shoes with heel-coverings, mocassins, laced boots, boots tied with cotton, boots of various hues, like the wings; boots pointed with ram's horns, and with goat's horns, ornamented with scorpions' tails, sewn round with peacocks' feathers, or shoes of all kinds of colours ..shoes adorned with lion-skins, tiger-skins, panther-skins, antelope - skins, otter - skins, cat- skins, squirrel-skins and owl-skins ; " " shoes of talipat leaves, foot coverings of tina-grass, of the leaves of the date-palm, of kamala-grass, and of wool, " ... " ornamented with gold or silver or pearls or beryls, or crystal, or copper, or glass, or tin, or lead, or bronze. " ¹⁰²

4. Wood - work :

The carpenter's art showed itself in all types of woodwork. We hear of carts and chariots in almost every page of ancient Sanskrit literature. The chariots were made with naves, spokes, and fellys,

(nabhya, upadhi, pradhi.)¹⁰³ The chariot consisted of two wheels (chakra) which consisted of a rim (pavi), a felly (pradhy), spokes (ara), a nave (nabhya). The hole of the nave was called kha, into it the end of the axle was inserted. The axle was in some cases made of Aratu wood : around its ends the wheels revolved. To the axles was attached the body of the chariot (kosha). At right angles to the axle was the pole of the chariot, (isha, prauga). Normally there was one pole, on either side of which the horses were harnessed, a yoke (yuga) being laid across their necks. The traces seem to be denoted by rashmi and rashna.¹⁰⁴

“ Except for the stools and beds, ” writes Dr. Coomarswami, “ the Indians scarcely use furniture. ” Hence we do not find references to elaborately prepared tables and chairs and sofas. Some types of chairs were in use from very early times. Thus we are told that the word Asandi appears to be now a throne, and now something between a chair and a bed, “ a long reclining chair ” such as Anglo-Indians use to-day with more comfort than elegance.¹⁰⁵

Some furniture, although not so varied and refined, did exist in the Vedic period. The wealthy people slept on cots (vahyam),¹⁰⁶ made of frame-

work of wood tied with strings or tapes and provided with bolsters, coverlets, and blankets. Besides the cots the furniture of a house consisted of chairs, (asandi, boxes (kosham),¹⁰⁷ domestic utensils, such as bowls (dhishana),¹⁰⁸ some of which were decorated with carvings,¹⁰⁹ buckets with hoops,¹¹⁰ sieves (shurpam)¹¹¹ wooden spoons, and sticks.¹¹² There was a treasury - box for the valuables in the house. "Now then what things we note, or what things are within the box, those things we commit to thee."¹¹³ Later on in the Buddhist period we hear of a great variety of chairs etc. "Now at that time a rectangular chair - an arm chair, - a sofa with arms to it, a state chair - a cushioned chair, - a chair raised on a pedestal - a cane - bottomed chair, - a straw - bottomed chair - had come into the possession of the Sangha."¹¹⁴

One of the most admirable types of carpentry was seen in the making of musical instruments. The vina or the lute, the cymbal, gargara, godha, and pinga, (probably stringed instruments), the bakura or the bag - pipe, and the drum or dundubhi are mentioned in the Vedas.¹¹⁵

But ship - building was one of the most important parts of the carpenter's work. The ship-builders

knew the properties of different types of wood that were used in the construction of ships. According to the Virksha - Ayurveda, the first or the Brahman class of wood is light and soft, and can be easily joined to any other class of wood; the Kashatriya class of wood is light and hard, but cannot be joined to any other class; the wood that is soft and heavy belongs to the Vaishya class: while the Shudra class of wood is both hard and heavy. Now it is the ships made of the Kshatriya class of wood that are to be used as the means of communication where the communication is difficult. Ships made of the timber of different woods possessing contrary properties are liable to split at the slightest shock. Nor is iron to be used in the construction of ships, for the iron will expose the ships to the influence of magnetic rocks in the sea.

Ships were divided, according to Bhoja, into two classes: (1) Ordinary ships were used in ordinary river traffic. (2) Special ships comprised sea-going vessels. Different types of vessels of both types are enumerated according to their lengths, breadths and depths. The smallest ship mentioned in the list of ordinary ships was called Kshudra and it was 16 cubits broad and deep; the Manthara was the biggest ship; it was 120 cubits long, and

60 cubits broad and deep. The special ships were divided into two classes; Dirgha, those noted for their length, and Unnata, those noted for their height.

Three classes of ships were distinguished according to the length and position of their cabins. The Sarvamandira vessels had the largest cabins: these were used for the transport of royal treasure, horses, and women. The Madhyamandira vessels had their cabins in the middle parts, these were used in pleasure trips by kings and were suited for the rainy season. And the Agramandira vessels had their cabins towards their prows, they were used in dry season after the rains have ceased. They were eminently suited for long voyages and were used in naval warfare. ¹¹⁶

The Jataka stories refer to the construction of ships. The carpenters used to go to forests for wood and after having obtained the necessary types of wood, would set themselves to shaping and moulding it. "The Great Being said: Ananda, take three hundred wrights, go to the upper Ganges, procure choice timber, build three hundred ships, make them cut stores of wood for the town, fill the ships with light wood and come soon." ¹¹⁷

5 Stone-building :

Architecture was certainly one of the arts to which ancient Indians gave considerable attention. Early architecture was often wooden : and hence we find that the workers in wood and stone were considered at one time, one and the same caste. "Brahmanaspati fashioned the earth and heaven from wood as carpenters fashioned wooden houses." These wooden houses were often movable. "Like a woman O Dwelling, we carry thee where we will."¹¹⁸ Such houses were often presented to Brahmanas who accepted them with the recitation of the Mantras.¹¹⁹ Often they were fixed in the ground with wooden pegs,¹²⁰ and they rested on wooden pillars (sthuna).¹²¹ The posts used for constructing houses were compared to elephant's feet.¹²² The beams (vamsha) used to support the roofs were tied together with strong cords. The beams and roofs were supported by props and cross-beams, they were held together by bolts, ropes, clamps, dovetails and reeds. The roof consisted of the thousand-eyed net, wicker-work mats stretched out on the division-line like the net-like dressing of the hair of ladies and a "robe of grass" to ward off the fierce heat.¹²³

Yet the Vedic Indians were familiar with the

stone architecture as well. They knew of cities (pura) as distinct from villages (grama). The Aryans as well as the Dasyus lived in cities.¹²⁴ The Arya gods as well as the Dasyu Asuras lived in gold, silver, and iron castles.¹²⁵ Indra is said to have overthrown a hundred stone castles of the Dasyus.¹²⁶ The forts of kings were supported by a thousand columns¹²⁷ and provided with a thousand doors.¹²⁸ Cities with a hundred enclosures or fortifications are referred to : these suggest the idea of forts, consisting apparently of a series of concentric walls as actually existing at that time.¹²⁹ It is possible that the houses of the rich had "four walls ;" ¹³⁰ their houses had a store room, a ladies' bower, a general room and an Agni's hall, ¹³¹ and a treasure-room paved with rock. ¹³² Vasistha longs to have a three-storeyed dwelling. ¹³³ Atri is described to have been " thrown into a machine-room with a hundred doors where he was roasted." ¹³⁴ Wilson writes : " That the cities of those days consisted to a great extent, of mud and mat hovels is very possible : they do so still...but that they consisted of these exclusively, is contradicted in several places. In one passage the cities of Sambara that have been overturned are said to have consisted of stone, in another the same cities are indicated by

the appellative *dehyah* the plastered, intimating the use of lime, mortar or stucco, in another we have specified a structure with a thousand columns which whether a palace or a temple must have been very different from a cottage." ¹³⁵

In the epics there are descriptions of a variety of architectural constructions such as temples, two-storeyed buildings, balconies, porticoes, triumphal arches, flights of stone-masonry steps in tanks, all indicating a high development of the art. Here a few instances will suffice. "And those mighty car-warriors...measured out a piece of land for their city. Then surrounded by a trench wide as the sea and by walls reaching high up to the heavens and white as the fleecy clouds or the rays of the moon, that foremost of cities looked resplendently like Bhogavati decked with the Nagas. And it stood adorned with palatial mansions and numerous gates, each furnished with a couple of pannels, resembling the outstretched wings of Garuda. And it was protected with gateways looking like the clouds and high as the Mandara mountains...And the streets were all wide and laid out excellently." ¹³⁶ "And the amphitheatre itself had been created on an auspicious and level plain to the north-east of Drupada's capital. And it was surrounded on all sides by beautiful man-

sions. And it was enclosed on all sides with high walls and a moat with arched doorways here and there. And the vast amphitheatre was also shaded by a canopy of various colours. And resounding with notes of thousand trumpets, it was scented with the black-aloe and sprinkled all over with water mixed with sandal paste and adorned with garlands of flowers. And it was surrounded on all sides by high mansions perfectly white and resembling the cloud - kissing peaks of Kailasa. And the windows of those mansions were covered with net - works of gold, and the walls were set with diamonds and precious stones. And the staircases were easy of ascent, and the floors were covered with costly carpets and cloths... And they were all white and spotless like unto the necks of swans. And they were each furnished with a hundred doors wide enough to admit a crowd of persons. And they were adorned with costly beds and carpets and beautified with various metals, they resembled the peaks of the Himavat. And in those seven - storied houses of various sizes dwelt the monarchs that were invited by Drupada.⁷¹³⁷ The description of Ayodhya the metropolis of king Dasharath is equally gorgeous. "On the banks of Sarayu there was a

great country called Koshala: it was happy and prosperous: and abounded in cattle, grain, and riches. In that country was the renowned city of Ayodhya which had been of yore built by Manu, the lord of mankind. That great and magnificent city was twelve Yojanas in length, and included nine sub-divisions. Its principal gates placed at proper intervals, were large and lofty, and its thoroughfares broad; it was embellished with numerous highways, the dust on which was allayed with showers of water. And there were crowds of merchants, and a profusion of jewels, as also many large mansions, fortified places, pleasant gardens. It was surrounded by a deep and unassailable moat, and contained an immensity of arms of various kinds. Its arched gateway was provided with doors and always guarded by numerous bodies of archers... The high roads of the city were provided with strong gateways, and its market places were well arranged and regularly disposed. There were in it lots of instruments and arms, and numerous works of art. Ambassadors and travellers paced its streets, the sides of which were embellished by the wares of merchants and traders. The temples in the city were as resplendent as sky.

Its assembly-halls, gardens and alms - houses were most elegant, and everywhere were arranged extensive buildings, crowded with men and women, with learned men and seniors wise as the Devas. The houses were as mines of gems, and the abodes of the goddess of fortune. The steeples of the houses were as resplendent as the crests of mountains, and bore hundreds of the chief among the Devas. The rooms were full of riches and corn, exquisitely gilt and decorated, and seemed as charming as pictures, and they were so arranged that men could pass from one room to another without perceiving any inequality (in the floor) while the dulcet sound of enchanting music, proceeding from the mridanga and the flute and the vina, filled every place. " 138

Other important developments of the architectural art related to the construction of irrigation works, and tunnels. The earliest large tank dates from the fourth century B. C. "What is even more remarkable than the amount of labour devoted to these works, is the evidence they afford of early skill in engineering, particularly in the building of sluices : those of the 2nd and 3rd century B. C. forming the type of all

later examples in Ceylon, and anticipating some of the most important developments of modern construction." ¹³⁹ In the Jatakas we read of the construction of a great tunnel; it must have been a feat in the science of engineering. The mouth of the tunnel was upon the bank of the Ganges. "Sixty thousand warriors were digging the great tunnel: the earth they removed in leather sacks and dropped in the river...The entrance into the greater tunnel was in the city: it was provided with doors, eighteen hands high, fitted with machinery so that one peg being pressed all were closed up. On either side, the tunnel was built up with bricks and worked with stucco: it was roofed over with planks and smeared with cements and whitened. In all there were eighty doors and sixty - four small doors which all by the pressure of one peg closed and by the pressure of one peg opened." ¹⁴⁶

The Arthashastra mentions some rules regarding the building of houses. Foundation shall be two Aratnis by three padas. All permanent houses shall be provided with a dung-hill, water-course, and a well. From each house a water-course of sufficient slope and three padas or $1\frac{1}{2}$ aratnis long shall be so constructed that water

shall either flow from it in a continuous line or fall from it, (into the drain.) There shall be an apartment for fire - worship, for a mortar, and for a cornmill. 141

6. City - Construction :

Shukracharya gives us a general chart for city construction. It is the picture of a big capital. In a place which abounds in various trees, plants, and shrubs and is rich in cattle, birds, and other animals, that is supplied with good sources of water and supplies of grains, and is happily provided with resources in grass and woods, that is bestirred by the movements of boats up to the seas, and is not very far from the hills, and that is an even-grounded, picturesque plain, the ruler should build his capital. Manu also gives similar suggestions for the selection of the site of a capital. It must command the vegetable, animal, and mineral resources of the country and be a centre of commercial activity. It is to have the Sabha or Council Buildings in the centre. It must even be provided with wells, tanks, and pools, it is to be furnished with four gates in the four directions, it is to have good roads and parks in rows, and well -

constructed taverns, temples and serais for travellers. To the " north of the palace the king should build the courthouse and the museum. Dwelling-houses for ministers, clerks, members of the Council, and officers should be built separately to the North or the East. At a certain distance from these, the military cantonments are to be laid out. The house of other people may be arranged near the palace in order of birth and wealth.

The houses are to be arranged in two rows: these must have their faces on the main road. A house is to have three, five, or seven rooms. The house may be broken at eight places for doors; two doors may be placed in each of the few sides. The floor of the room should be made one - fourth of the height; in the cases of palaces and temples, it may be one - half. The rest - houses for travellers are to be built strong and provided with tanks. ¹⁴²

7 Ivory:

Ivory and some analogous materials were used in the construction of various articles. Manu refers to the articles of " horns, conch-shells,

bones or teeth (tusks)." (V. 121.) The Buddhist writings also contain references to them. "Various kinds of boxes for ointment, gold ones and silver ones are not be used. I allow the use of such boxes as made of bone, or ivory, or horn, or of the nala reed, or of bamboo, or of wood, or of lac, or of shells of fruits, or of bronze, or of the centre of the ehank-shell." ¹⁴³ The Boddhisatta was once called upon by a king to make a house of ivory. ¹⁴⁴ Trade in elephant tusks is often referred to. "A poor man that lived in Benares, seeing the workers of ivory bazar, making bangles and all manner of ivory trinkets, he asked them, would they buy an elephant's tusks, if he would get them. To which they answered yes." ¹⁴⁵ "It is worth while to remark that a good deal of the material used for dagger-handles and similar purposes is not Indian or African ivory, but is known as fish-tooth, most of it being fossil ivory from Siberia. Old examples prove that there used to exist an overland trade in this material. Hippotamus and walrus ivory may also have found its way to India by land routes. It is remarkable how little the question of distance from a source of a material, or from a market, appears to affect an old manufacture." ¹⁴⁶

III

1 Metal Industries :

Vedic Period : Gold and Silver :

Very early the Indians became familiar with metals and their uses. It is said that there are only two words common to the Indo-Germanic languages, applied to metals, Ayas and Loha. The name ayas originally referred to bronze, but was transferred to iron in India. Loha meaning red, first signified native copper, but in India it came to be applied to iron. There were various words in use for metals in the Vedic India. " Ayas (bronze), karshnayas (iron), candra (gold), Jatarupa (gold), Suvarna (gold), Harita (gold), Hiranya (gold), Lohayas, Lohitayas, Syamasa (iron) Loha (copper) Shisha (lead), Trapu (tin), Rajata (silver). " 147

Gold and silver naturally became the prominent objects of attention, owing to their glitter. Silver is rarely mentioned in earlier literature,¹⁴⁸ but gold is abundantly referred to. It was obtained from the beds of rivers, hence the Indus is called 'golden'.¹⁴⁹ The extraction of gold from the earth also was known. "Ye brought forth Vandana

...like fair gold that hath been buried." ¹⁵⁰ Gold was obtained from the ore by smelting. ¹⁵¹ Gold appealed very much to the imagination of the Indian and was prized very highly. The epithets "refulgent as bright gold," "brilliant as gold," are spread over the Vedas. ¹⁵² Gold was one of the most highly esteemed gifts and hence a special object of prayer on the part of a priest. "Ten horses and ten treasure-chests, ten garments as an added gift, these and ten lumps of gold have I received from Divodasa's hand." ¹⁵³ It was supposed to be a special source of long life and vigour to him who wears it. "The gold of beauteous colour by the sun, that men of old with their progeny sought-that, shining shall unite thee with splendour; of long life becomes he who wears it. For life time thee, for splendour thee, and for force, and for strength-that with brilliancy of gold, thou mayst shine out among the people." ¹⁵⁴ Goldsmiths melted gold and prepared all sorts of ornaments from them. "And as a goldsmith taking a piece of gold, turns it into another, newer and more beautiful shape." ¹⁵⁵ Gold ornaments were very popular and considered highly fashionable. "Gold chains are on your chest, and glittering ornaments." ¹⁵⁶ "Bring cattle, bring us orna-

ments, bring us embellishment and steeds; give us besides, two rings of gold, and bold one, bring in, ample store, rich jewels to adorn the ear." ¹⁵⁷ "Lances are on your shoulders, anklets on your feet, gold chains are on your breasts, gems, Maruts on your car...visors wrought of gold are laid upon your heads." ¹⁵⁸ "They like young suitors, sons of wealthy houses, have with their golden ornaments decked their bodies." ¹⁵⁹ Kine were often decked with golden ornaments. ¹⁶⁰ Cloths of gold were placed upon horses. ¹⁶¹ Chariots were also made of gold or plentifully adorned with gold. "Ascend your car with golden seats. O Ashwins, and with reins of gold; golden as the supporting shaft, axle also is of gold, and both the wheels are of gold." ¹⁶² Water-pots and images were sometimes made of gold. ¹⁶³

2. Iron :

The metal in common use must have been iron or some species allied to it. A verse in the Chhandogya shows that most of the metals as well their properties were sufficiently known to the Vedic Indians. "As gold is joined by salt, silver by gold, zinc by silver, lead by zinc, iron by lead, wood by iron, and leather by wood." ¹⁶⁴ The blacksmith was

evidently a busy personage ; we hear of the manufacture of swords, spears, hatchets, lances, axes, quivers, knives, razors, helmets, coats of mail, sickles, ploughshares, pots, goads, needles, hatchets for felling trees, hooks for shaking fruits off trees, iron legs for those who had lost their natural ones, iron forts, arrows tipped with iron. ¹⁶⁵

3. Domestic vessels :

An industry important both from the point of view of art and usefulness is the manufacture of domestic vessels and utensils. Nowadays brass is mostly used ; domestic brass is the glory of the Hindu kitchen. But brass was not used till the 10th or 11th century. Vessels were made before that time of bronze or copper. These metals were called black metal, and red metal. Lohayas is distinguished in one passage from ayas and gold. ¹⁶⁶ The metal bowls were probably made of bronze. ¹⁶⁷ Some of these vessels were used in ceremonies only and hence were regarded as sacred. "The jar is called Kalasha, because Vishwakarma made it from the different parts of each of the Devas...it should be made without hole or crack. In its making, all miserliness should be avoided, since it is fashioned for the pleasure of the Devas." ¹⁶⁸ "Twashata most

deft of workmen, knew each magic art, bringing most blessed bowls that hold the drink of gods... Now O ye sapient ones make ye the axes sharp wherewith ye fashion bowls to hold the amrita." ¹⁶⁹ "Caldron's metal" filled with food is also referred to. ¹⁷⁰ Twashta, the Vulcan of the Hindu pantheon, was the most celebrated artificer of the metallic things. Dr. Muir writes: Twashtri is in several passages connected with the Ribhus, who like him are celebrated as skilful workmen, who fashioned Indra's chariot and horses, made their own parents young; and are spoken of by Sayana as Tvashtri's pupils. These Ribhus are said to have made into four a single new sacrificial cup which Tvashtri had formed. This exhibition of skill is used to have been performed by command of the gods and in consequence of a promise that its accomplishment should be rewarded by their exaltation to divine honours. Twashtri is in this passage represented as being ashamed and hiding himself among the goddesses when he saw this alteration of his work, and as resenting this change in his own manufacture as slight to himself, and as having in consequence sought to slay his rivals. In another place on the contrary, he is said to have applauded their design, and admired the brilliant results of their skill. ¹⁷¹

Tin and led are also referred to. Tin was called trapu from the fact that it was easily smelted (trap, to be ashamed).¹⁷² A leaden weight was used by the weavers.¹⁷³ Lead was much used in sorcery.¹⁷⁴ Silver was rarely used : it was used in the manufacture of ornaments, coins, and dishes.¹⁷⁵

4. Antiquity of Metal Industry :

The fact of the early knowledge of these metals and their uses cannot now be disputed, since the very ancient Vedic literature is full of proofs regarding the antiquity of the Hindu knowledge of mining and metallurgy. Still if proofs were wanting, they are supplied by early references to trade in these metals, in the classical writings. Egypt used to import in very early times gold, tin, precious stones, ivory etc, from India. "In the abundant booty, loading the vessels of Pharaoh for conveyance to the land of Egypt appear a great many Indian animals and products not indigenous to the soil of Yemen - elephants' teeth, gold, precious stones, sandal-wood, and monkeys."¹⁷⁶ Solomon in 1015 B. C. (approximately) joined Hiram, king of Tyre in a nautical and commercial venture. "For the king had at sea a navy of Tarshish with the navy of Hiram : once in three years

came the navy of Tarshish, bringing gold and silver, ivory, apes, and peacocks. "177 In the face of this evidence scholars like Herren and Lassen believed that gold and silver were not indigenous to India, but were importations from other countries. But this is not correct. "According to Roscoe and Schorlemner, the ancient Hindus were the first to discover gold. All the appellations that have been applied to gold by different peoples of the ancient world bear testimony to this statement... According to Roscoe and Schorlemner, the different nations gained their knowledge of extracting from their ores from the Hindus. "178 This conclusion is supported by an expert like Prof. Ball. " When it is remembered that about 80 p. c. of the gold raised throughout the world is from alluvial washing and when this fact is considered in connection with the reflection that wide tracts in Australia and America, formerly richly productive are now deserted, being covered with exhaustive tailings it can be conceived how these regions in India, and there are very many of them which are known to be auriferous, may, in the lapse of time, after yielding large supplies of gold have become too exhausted, to be of much present consideration. More than this, however, recent ex-

plorations have confirmed the fact, often previously asserted, that in Southern India, there are indications of extended mining operations having been carried on there...Evidence exists of the most conclusive kind of large quantities of gold having been amassed by Indian monarchs, who accepted a revenue in gold dust only, from certain sections of the subjects, who were consequently compelled to spend several months of every year washing for it in the rivers."179

5. Epic period and after : Gold :

In the Mahabharata, we meet with various accounts of gold. A mythological account of the origin of gold is to be found here. Its origin is in Agni or fire : hence its brilliant lustre. Agni casts his seed into the Ganges, which being unable to bear it, throws it on the earth. Ganges said : " The foetus is endued with the complexion of gold. In energy it is like thee (Agni), O sinless one. " It was in consequence of the result of this act that the Rishis and the deities bestowed the name of Hiranyaretas (having gold for his vital seed) upon the deity of fire. And because the earth held that seed she came to be called by the name of Vasumati. Gold was called Jata-

rupam because it assumed an excellent form after its birth from Agni. It is the foremost of all costly things, and among ornaments also it is the foremost.¹⁸⁰ In another account it is said to be the essence of the universe and born out of churning it. "Churning the entire universe, a mass of energy was found. That energy is gold... It is a precious thing, high and excellent. It is for this reason that the Deities and Gandharvas and Uragas, and Rakshasas and human beings and Pishachas hold it with care. All these beings, O son of Bhrigu's race, shine in splendour, with the aid of gold, after converting it into crowns and armlets and diverse kinds of ornaments. It is also for this season that gold is regarded as the most cleansing of all cleansing things such as earth and all other kinds of wealth." ¹⁸¹

Yet all accounts given in the great epic are not mythological. Iron as well as gold are said to have their origin in stone. "Fire rose from water, the military caste rose from the priestly caste and iron had its origin in stone. The power of these which can penetrate all other things, hath no operations upon the sources from which they spring." ¹⁸² "One should extract

truths from the ravings of the maniac, and the prattlings of the children, like gold from stone." ¹⁸³ This means that gold might have been dug out or extracted from earth or quartz stones in some crude manner. The Mahabharata also has allusion to gold dug out by ants and hence called pipilaka. "They that dwell by the side of the river Cailoda flowing between the mountains of Mer and Mandara.....brought as tribute heaps of gold measured in Dronas (jars) and raised from underneath the earth by ants, and therefore called after these creatures." ¹⁸⁴ The regions famous for the production of gold were the Himalayas, the rivers of Northern India...and the hilly regions of the South. ¹⁸⁵

Gold was one of the most precious articles of princely charities. It was also plentifully used in the construction of articles for royal use. Brilliant cars of gold are often referred to. "All the vessels and plates in Rantideva's palace for holding food or other articles, all the jugs and pots and pans, and plates and cups, were of gold." ¹⁸⁶ "He gave away unto deserving Brahmins, palatial mansions with columns of gold, and (other parts) made entirely of that precious metal." "King Prithu in one of his grand Horse -

sacrifices gave away unto the Brahmins one and twenty mountains of gold, each measuring three nalvas (nalva : 40) hundred cubits.) " 187

6. Other metals :

Many other metals were also known and employed in the manufacture of various articles. "The scum of gold is silver, of silver tin, of tin lead, and of lead useless dregs." "O Bharat, Manu hath said that, goats, bulls, sandals, lyres, mirrors, honey, clarified butter, iron, copper, conch-shells, the stony image of Vishnu with gold within, and gorochana should always be kept in one's house, for the worship of the gods, Brahmins, and guests, for all these objects are auspicious." 189 Iron was largely employed in the construction of arms and weapons. "And King Yudhisthira caused to be placed in every pavilion large quantities, hugh as hills, of bow - strings, and bows, and coats of mail and weapons...heavy machines, long shafts, lances, battle-axes, breastplates, scimitars, and quivers." 190 "King Bhagadatta, made over to Yudhishtira," "a number of swords with handles made of the purest ivory and well - adorned with diamonds and every kind of gem." 191 The Valhikas brought as

presents "sharp and long swords and scimitars and hatchets, and fine-edged battle-axes manufactured in western countries." 192

Manu alludes to all kinds of metallic vessels. All gems, metallic articles, and things made of stone are to be washed with water, ashes, and earth. Silver and gold are said to have originated from fire and water: hence they should be purified with fire and water. Articles made of copper, iron, bell-metal, brass, zinc or lead should be purified with alkali, acid and water as suited to each of them. 193 All vessels made of iron become pure by exposure to the fire. 194

7. Buddhist Period :

In the Vinaya text we find how gradually Buddha had to allow use of many articles to the monks. Now at the time the Bhikkhus served their robes with quills or bits of bamboo rind, and the robes were badly sewn. They told this matter to the Blessed one. "I allow you O Bhikkhus, the use of needles." Then in order that the needles may continue to be sharp, he had to allow the use of a needle case made of bamboo, chunam, the use of powdered stone, of bees' wax, of sipatika gum. 195 When the robes became jagged, because the Bhikkhus

used to tear the cloth with their hands. Buddha allowed them the use of a blade and of a sheath made of felt. "I allow you, O Bhikkhus the use of handles to your blades made of bone, or ivory, or horn, or of the nala-reed, or of bamboo, or of hard wood, or of lac, or of the shell of fruits, or of bronze, or of the centre of the chank-shell." ¹⁹⁶ Bowls were made of all sorts of metals and other suitable articles: these were all forbidden to the Bhikkhus. "You are not O Bhikkhus, to use bowls made of gold, or made of silver, or set with jewels, or made of beryls, or made of crystal, or made of copper, or made of glass, or made of tin, or made of lead, or made of bronze." ¹⁹⁷ Some of these Bhikkhus had painted circular linings to the bottom of their bowls, and had bowls with painted figures scattered over them or painted in patches of colour, and they were very fond of exhibiting them in the streets. ¹⁹⁸ We are told that a copper vessel "when it is being beaten into shape, makes a sound again and again as it gradually gathers shape." ¹⁹⁹ We are also told that a ship pierced together with the timber of all sorts, is broken by the force of the violence of the waves...and gold of the finest sort is divided by bronze. ²⁰⁰ It is also interesting to know that "black iron even when beaten out carries

weight:” and black iron does not vomit up the water it has once soaked in.²⁰¹

8. Notices of metals in the classical writers :

1. Herodotus :—(5th century B. C.)

Babylon obtained precious stones and dogs (probably Tibetan mastiffs) from India.²⁰² The Indians used to pay to Darius, the Persian monarch 360 Eubaic talents of gold as tribute, i. e. £. 1,290,000. All the other tributaries used to pay their money in silver. India therefore, was ‘rich in gold’²⁰³ The portion of India conquered by Darius was probably situated on the north-west of the Indus.

2. Ktesias :

There is a lake in the country of the Pygmies, we are told, upon the surface of which oil is produced. Such a tribe seems to have existed in Upper Burma, which is also full of large petroleum deposits, which we know to have been worked since the earliest times.²⁰⁴ It is also remarkable that rock-oil and silver were found in the same region, for Upper Burma alone is known to produce both.

The electron or amber of Ktesias during thirty days of the year exuded like sweat from the trees

on the mountain into the river Hyparkhos, and turned hard in its waters. It was certainly shellac, and the insects found with it, which yielded a red dye were lac insects.

The Pantarba, a seal-ring or stone, had the property of drawing together other stones of various colours to the number of 77, when thrown into the water. It was suggested by Count Von Velthim that this was some kind of opal, which on being put into water exhibited a rich play of colours.

Iron is said to be found in a spring. Ktesias had two swords made of Indian iron, given to him respectively by the king of Persia and his mother. It is said that this iron had power of turning off hail, clouds, and lightning. This suggests an early knowledge of lightning conductors as Lassen points out.

Gold :

Every year, we are told, a spring filled itself with fluid gold which was drawn from it in one hundred earthen pitchers. The gold congealed there and the pitchers had to be broken in order to get it out. The spring was quadrangular, eleven ells in circumference, and about two yards deep. Each

pitcher contained one talent of gold. Lassen remarks: "The sense of this passage can only be that auriferous ores were melted, and that the gold obtained from them was drawn out in a fluid state. Instead of a spring there must have been a cistern prepared to receive the gold. As a pitcher need not be very large to contain one talent of gold this particular may be correct. If this supposition is right it follows that the Indians knew how to extract gold from the ore by melting."

Silver mines also were there in India but not as deep as they were in Bactriana.²⁰⁵ The Sardine stones, the onyx, and other seal stones are said to be found in certain high mountains.

3. Magasthenes :

He testifies to the existence of mines in India. "And while the soil bears on its surface all kinds of fruits which are known to cultivation, it has also underground numerous veins of all sorts of metals, for it contains much gold and silver, and copper and iron, in no small quantity, and even tin and other metals which are employed in making articles of use and ornament as well as the implements and accoutrement of war."²⁰⁶ "The robes are worked in gold and

ornamented with precious stones." 207 Prof. Ball remarks: "The Greek name for it (tin), *kassiteros* is said to be derived from Sanskrit *Kastira*. That India produced tin in sufficient quantities for exportation is improbable. The tin which she did export probably came to the Indian ports from the Malayan countries or Tenasserim." *Megasthenes* also, like *Herodotus* and *Ktesias*, in his own way narrated the story of the gold-digging ants. "Among the *Derdai* a great tribe of Indians...there is an elevated plateau. Beneath the surface there are mines of gold, and here accordingly are found the ants which dig for that metal. They are not inferior in size to foxes. They run with amazing speed, and live by the produce of the chase. The time when they dig is winter. They throw up heaps of earth at the mouth of the mines. The gold dust has to be subjected to a little boiling. The people of the neighbourhood, coming secretly with beasts of burden, carry this off. If they came openly the ants would attack them...So...they lay down in several different places pieces of the flesh of wild beasts and when the ants are by this means dispersed, they carry off the gold dust. This they sell to any trader they meet with, while it is

still in the state of ore, for the art of fusing metals is unknown to them." ²⁰⁸ These ants are now taken to be Tibetan miners: and the 'horns of the gold-digging ants' referred to by Pliny and others were probably pick-axes used by the miners. In Tibet these were prepared from the horns of wild sheep, mounted on handles of wood.

4. Pliny :

"Next follow the Nareae enclosed by the loftiest of Indian mountains, Capitalia. The inhabitants on the other side of this mountain work extensive mines of gold and silver." Capitalia is taken as Mount Abu: and the Narea may refer to the Nayaars of Malabar, where the ancient gold mines were situated. ²⁰⁹ Again we are told: Gold is very abundant among the Derdae and silver among Setae.

5. Pliny (A. D. 77) (*Historia Naturalis*;) remarks that gold was obtained in the tributaries of the Upper Ganges. The best of iron is made by the Seres i. e. the Chinese.

Many other gems are mentioned: Kauta, or that which is obtained in the Kuta (a mountain) Mauleyaka, that which is found in the Muleya

(another mountain), Parasmudraka, that which is found beyond the ocean.

The Saugandhika gem possesses the colour of the red lotus flower, or of the Parijata, or of the rising sun.

The Vaidurya gem is of the colour of the blue lotus flower, or of fresh bamboo, or of water, or of the parrot. Its other varieties are Pushyara, Gomutraka, and Gomedika. These were found in the Vindhya, the Vidura, the Malaya mountains.

The Indranila is intensely blue. Nandaka, Suryakanta etc. are other forms of gems.

Diamonds were collected from mines, streams and other miscellaneous places. They were found in the Vidarbha country; in the Kosala country; in the country round Benares; in the Kalinga country; and the Vindhya and Sahya mountains.

It will suffice here to quote the remarks of Sir George Birdwood: The Hindus "by their consummate skill and thorough knowledge and appreciation of the conventional decoration of surface contrive to give to the least possible weight of metal, and to gems, commercially absolutely wei-

ghtless, the highest possible artistic value... This character of Indian jewellery is in remarkable contrast with the modern European jewellery, in which the object of the jeweller seems to be to bestow the least amount of work on the greatest amount of metal. " No wonder that there went abroad the tradition from very early times about the " wealth of Ind, " and the gorgeous East which " with richest hand showers on her kings barbaric pearl and gold. "

9. Metallurgical Industries in Shukra and Arthashastra :

There are many references to metals and other minerals in Shukracharya. Gold, silver, copper, zinc, lead, tin, and iron - these are the seven metals. Others are alloys. Bronze is the alloy of zinc and copper, pittala (brass) of copper and tin. If two pieces of a metal - one pure and another suspected of alloy - be successively passed through the same hole, and threads of equal length be drawn out of them, and weighed, and if the weights of each are equal, then the metal is unalloyed, otherwise not.

Gold of course is the best metal. It has great weight in small bulk : this is one mark

of its superiority. Its value is sixteen times that of copper. The value of copper is one and a half time that of zinc. The value of zinc is twice that of tin and thrice that of lead. The value of copper is six times that of iron.²¹⁰

Gold is used as a standard of value as well as a medium of exchange. It is also used as a material for ornaments. The testing of gold and other metals is an art. The making of ornaments with gold and other metals is an art.²¹¹ In the Mahabharata, we are told that gold is tested by fire. Other criteria may be given. "Just as gold is tested by experts by having reference to the lightness or heaviness of weight, colour, sound etc., so also one should examine servants or officers by reference to their work, companionship, merits, habits, family-relationship etc."

Silver is used in the same way as gold. Copper is useful in the preparation of badges and images.²¹² Lead was used for cannon-balls, and as an ingredient of gun-powder.²¹³ The alloys - pittala and kansya, are used for badges and images.²¹⁴ "Brass and bronze play in the Hindu household an important part as glass and chinawares among Western nations. The Hindus

influenced strongly by a feeling against using earthen and wooden wares, have been using from time immemorial, brass and bronze wares for domestic purposes and copper ones on ceremonial occasions." ²¹⁵

Iron was one of the most ancient as well as most flourishing industries in India. The fact that there were iron-walled cities in the Vedic period shows that the hardness of iron was known: but was it worked into shape? Indra's horse had feet of iron, which refers to the practice of shoeing horses. Swords, spears, javelins, lances, hatchets, are described as "made of iron" "blazing" "sharp," "bright as gold." They are "whetted on grindstones" to improve their keenness, and polished "to enhance their brightness." Razors too must have been made of iron. All this proves the extreme antiquity of iron industry in India. Shaw remarks that "the hardest tools in ancient Egypt...were made of Indian iron." King Porus gave 30 lbs. of steel to Alexander; and according to an Arabic proverb to "give an Indian answer" means "to give a cut with an Indian sword." The evidence of Ktesias also proves this. The famous iron pillar of Chandragupta II, at Delhi shows that "already in the 5th century A. D. the

Indians were able to forge masses of iron larger than any which European foundries could deal with before the latter part of the 19th century."²¹⁶ The remarkable fact about this pillar is that it has never rusted although it is fully exposed to the weather. The Indians knew very early the art of preparing steel: the steel of India was known to the Greeks, the Persians, and the Egyptians and was the material of the famous Damascus blades.

The most famous branch of iron industry was the preparation of arms and weapons. The Agni Purana divides them thus: (1) missiles cast by machines, such as bows, (2) cast by the hand such as javelins; (3) retractive missiles such as the lasso and the bomerang; (4) non-missiles such as spears; (5) natural weapons as the fist etc. "Of all battles that in which bows are used is the best of all, that in which men fight with barbed instruments is tolerable. Fighting with swords is low and mean, and without arms, with bare hands the meanest."

Bows are formed of three things, metal, horn, and wood: and the string of the bow is likewise made of sana fibre, hemp, and skin or hide. Metal bows were made mostly of iron. The arrow is referred to in the Rigveda now as made of horn of deer, and now with a blade of iron. Most of these

arrows were barbed according to the Mahabharata... Quivers were usually made of hide or basket-work, but quivers of gold are also referred to. There were also fire-arms called the Nalika "the tubular weapon" through which fire darts were discharged, the Mahayantra or the 'great engine' and the Shataghni or "centicide" which could kill a hundred at a time. All these are mentioned in the Mahabharata, and described in the Shukra-niti. Other references are to bullets, cannon-balls, and gunpowder.²¹⁷ We are told also that iron by proper methods could be converted into a liquid.

Among other minerals we find - alum, sulphur, alkalis, stones. Alum is referred to in the Shushruta. It is called सुराष्ट्र i. e. begot of Shurashra or modern Surat. From the ancient times, the "earth of Surat" has been known to yield this mineral.²¹⁸ Sulphur has been mentioned as an ingredient of gunpowder. The recipes for preparation of gun - powder are given. The demand of sulphur in ancient India and the consequent supply of it involved a good number of auxiliary and allied industries in mining, metallurgy, and manufacture, utilising the by-products. Thus as Sarkar points out, we are led to infer

the existence in Ancient India, of all those industries to which sulphur is a key.

Glass in India, writes Mr. Jayaswal, was a manufacture long before it became known to Ceylon (3rd Cent. B. C.) The Arthashastra calls false gems " glass - gems " and mentions the manufacture of glass. Pliny's description indicates a long previous history of the industry in this country. Coloured glass was well-known to the Arthashastra. The glass - worker called at present Maniyara, is mentioned by the very name (manikari) in the Mahavastu. The word kacha is used in very ancient works. The making of glass vessels is a kala or an art in the Shukraniti. ²²⁰⁻¹

Alkalies are mentioned as ksharas : the extraction or preparation of alkalis was a kala. ²²²

Stones were less durable than metals. They were used in the construction of images and as an ingredient of gunpowder. ²²³ There was the art of cleansing, polishing, dyeing, rinsing, etc. of stones. Another art is the melting and incineration of stones. ²²⁴ " Hindus, as Mr. King observes, were the earliest of mankind to attain mechanical perfection and facility in the

treatment of the hardest stones, executing with facility many operations which would baffle the skill of the most expert modern lapidary ; such as boring fine holes with the greatest precision, not merely through the sardonyx but even through the sapphire and the ruby. ”

10. Mining :

The operation of metallurgical industries mentioned above clearly proves that there were extensive mining operations in those days. Shukra refers to the unsunned treasures buried beneath. Megasthenese also testifies to their existence. We are told that in a particular district of Bengal : “ Indications exist of mining and smelting having been carried on in this region from a very early period and the evidence available points to the Seracs or lay Jains as being the persons who perhaps 2,000 years ago initiated the mining. The number and extent of the ancient workings testify to the assiduity with which every sign of the presence of the ore was exploited by these early pioneers and those who followed them upon recent times. ” ²²⁷ But detailed evidence regarding the working of mines is to be found only in the Arthashastra. There were two

types of mines viz. (1) ocean mines and (2) land mines. The Superintendent of ocean-mines was to attend to the collection of conch - shells, diamonds, precious stones, pearls, corals, and salt, and also regulate the trade in those articles. A special department existed for the supervision of the land mines, at the head of which was an expert in minerology with a staff of able and highly equipped specialists. His one great duty was to find out new mines and to ascertain from mineral excrement, crucibles, charcoals, ashes etc. whether they have been once exploited or not, and to examine the richness of new ores in new mines by their weight, depth of colour, piercing smell, and taste.

Different metals have different properties on examination of which their presence is to be detected. "Liquids which ooze out from pits, caves, slopes, or deep excavations of well-known mountains, which have the colour of the roseapple, or of mango, and which are greasy, transparent and very heavy are ores of gold." In this way details are given regarding silver, bitumen, other ores of gold, copper, tin, lead, tikshna etc.

The second stage was the purification of the ores. The ores were chemically treated with Tikshna (human urine), urine, alkalis, Rajavriksha, Vata, Pelu, cow's bile, the urine and dung of a buffalo, an ass, and an elephant. Metals were rendered soft and malleable by treating them with various ingredients, e. g. the ashes of barley, black beans, or with the powder of cow's teeth and horn.

Mines which required large outlay were usually leased out, others were worked by Government.

The next stage was the manufacture of these metals and articles from them. Here the various metals were taken charge of by special superintendents : A superintendent of gold, a superintendent of inferior metals, a superintendent of armoury ; a superintendent of the mint ; a superintendent of the treasury, a superintendent of salt.

Mines were a special source of revenue. The following rates were levied from the mines : (1) value of the output (mulya) ; (2) the share of the output (vibhag) ; (3) the premium of 5 per cent ; (4) the testing charge of coins ; (5) fines

previously announced ; (6) toll ; (7) compensation for loss entailed on the king's commerce; (8) fines to be determined in proportion to the gravity of crimes ; (9) coinage ; and (10) the premium of 8 per cent.²²⁸

IV

1. Gems : the Vedic Period.

The Hindu fondness for gold as well as precious stones and ornaments made of these is well - known. " (The deities smile on the family) where the females are honoured ; fruitless are the acts (in the family) where they are dishonoured...Hence they should be satisfied with presents of food, raiments, ornaments etc. by men seeking prosperity, on festive and ceremonial occasions. A charming wife lends her charm to everything, and makes the whole world look attractive to the husband, a charmless wife robs the world of its charms."²²⁹ In these lines Manu gives a religious colour to a passion which lies deep down in a Hindu lady's heart. "One need be an Indian woman, born and bred in the great tradition, to realise the sense of power that such jewels as ear - rings and anklets lend their wearers : she knows the full delight of

swinging jewels touching her cheek at every step and the fascination of the tinkling bells upon her anklets." ²³⁰ We have already noticed the Vedic Indians' fondness for ornaments, for necklace, for rings, for chains, for ear - ring. The Amarakosha gives names for crowns, crests, tiaras for the head : of rings, flowers, and bosses for the ears : of necklaces of one to a hundred rows, and of various shapes and patterns ; of armlets and bracelets, of signets and other rings for the fingers ; of zones and girdles for the waist for both men and women ; as also of ornaments of bells, bands, chains for the leg and ankle.

Mani is the name of a jewel in the Rigveda and later it was worn round the neck as an amulet against all kinds of evil. There is a hymn in the Atharvaveda regarding the origin of pearls. " Born from the wind out of the atmosphere, out from the light of lightning let this gold born - shell of pearl, protect us from distress. Thou that wast born from the top of the shining spaces out of the ocean...The gods' bone became pearl : that goes about within the waters, possessing soul, that do I bind on thee in order to life - time, splendour, strength, to length of life for a hundred autumns, let (the amulet) of pearl

defend thee." ²³¹ Again, " what the ocean roared against, (and), Parajanya with the lightning therefrom, was born the golden drop (bindu). "

The remarks of the editor on this passage are interesting. " The bit of folk - lore about the origin of pearls by transformation of red drops falling into the sea is as old as this Vedic text... According to Aelian... a pearl forms when the lightning flashes into an open sea - shell ; according to an Arabic writer, when rain - drop falls into it or according to Pliny dew. "

2. Gems in the Epics.

In the Mahabharata we find mention of various types of gems. The homes of the Danavas are described in a passage: " Behold their homes, O Matali, that are all made of silver and gold, and well - adorned with decorations applied according to the rules of art. All those mansions are decked with lapis lazuli and corals, and made effulgent with the lustre of the Arthasphatika, and the radiance of the gem called Vajrasara. And many of these palatial residences seem as if they are made of shining earth or of those gems called Padmaragas or of weighty marble, or of excellent wood. " ²³³ " The monarch saw a palatial

mansion made entirely of gold. Possessed of a thousand columns each of which was made of gems and precious stones, it looked like an edifice belonging to the Gandharvas...And there were diverse kinds of excellent seats and costly beds, and bed - steads made of gold and gems, and over - laid with cloths and carpets of great beauty and value."²³⁴ The Mlechha kings on the red sea (lohita) coast gave as tribute to Yudhishthira, " clothes and gems and pearls and blankets, and gold and silver, and valuable corals...and coins and gems counted by hundreds of millions." Vibhishana sent from Ceylon " diverse kinds of jewels and gems...and many valuable pearls." The Valhikas brought as presents jewels and gems of various kinds by thousands. The Chola and Pandya kings also had brought " many gems of great brilliancy." Thus the Himalayas, the mountainous regions of the South, Ceylon, and some other hilly countries were famous for the production of precious stones.

3. Gems in Buddhist literature.

The Buddhist works also bristle with allusions to jewels of various types. " Just O king, as the diamond cannot be alloyed with any other

substance...and again O king, just as a diamond is set together with the most costly gems.^{"236} The sea is said to carry within it stores of all kinds of gems and yet counceal them - " pearls, diamonds, and cat's eyes, and chank - shells, and quartz, and coral, and crystal.^{"237} " And just O king, there are many gems of value found in the earth - the sapphire, and the great sapphire, and the wish - conferring gem, and the acasia gem and the entrancing gem, and the favourite of the moon, and the crystal and the kaggopakkaniaka, and the ruby, and the Masara stone - but the glorious gem of the king of kings is acknowledged to be the chief of all these, and surpassing all, for the sheen of that jewel, O king, spreads round about for a league on every side.^{"238} " That wondrous gem, O king of a sovrán over - lord, bright and beautiful, with its eight facets so well cut, four cubits in thickness, and in circumference as the nave of a cart - wheel, could no man wrapping it up in a cloth, and putting it into a basket, keep and use as a hone to grind his scissors upon.^{"239} " The ornaments of the elephant's four feet were worth four hundred thousand, and the blanket under his belly a hundred thousand, on his back were sets of pearls, of gold, and of jewels....

moreover the jewels great and small upon the canopy, the jewels in his neck - lace of pearls, the jewels in the goad, the jewels in the pearl necklace about his neck, the jewels on his frontal globes, all these without price.²⁴⁰ There is also a reference to a water - clearing gem. If it were thrown into the water then at once all the mud would precipitate itself, and the sandy atoms of shell and bits of water plants would disappear, and the water would become clear, transparent, and serene.²⁴¹

4. Gems in classical writers.

Meghasthenes writes that the oyster which yields the sea - pearl is there fished for with nets, and that in the same place the oysters live in the sea in shoals like bee - swarms for oysters like bees have a king or a queen, and if any one is lucky enough to catch the king, he readily encloses in the net all the rest of the shoal, but if the king makes his escape there is no chance of catching the others. The fisher - men allow the fleshy parts of such as they catch to rot away and keep the bone, which forms the ornament: for the pearl in India is worth thrice its weight in gold, gold being a product of the Indian mines.

Pliny mentions Murrhine, Adamas, Samaragdus, Beryls, and Opals. Murrhine was very hard, and yet we are told that a person of consular rank used to drink out of this cup and became so passionately fond of it as to gnaw its edges. Adamas possessed the greatest value. Twelve varieties of Samaragdus are mentioned, some of them being emeralds. Beryls are said to be found in India and very rarely elsewhere; opals were produced only in India.

Ptolemy refers to a place on the Ganges as one producing most diamonds. Another locality mentioned by him is identified with Sambhalpur. It was a diamond-producing place. Ceylon produced beryl, hyacinth, and all sorts of metals: the last however is doubtful. The onyx was found at Paithan on the Godavari. The Sardonyx mines are probably identical with the famous Cornelian and agate mines of Rajpipala or Ratnapur. The loadstone rocks of India may be identified with certain hills ranges of Southern India. ²⁴³

5. The Gems in Shukraniti: The nine Maharatnas or great jewels are vajra (diamond), mukta (pearl), pravala (coral), gomeda (agate), indranila (sapphire), vaidurya (lapis lazuli),

pushyaraga (topaz), pachi (emerald), manikya (ruby). Vajra is the poet's favourite, very transparent and has the lustre of the star. Its exchange value is 400 times that of gold.

Mukta or pearl is the Moon's favourite, it is of red, yellow, white and greenish blue colour. It is lower in value than a diamond. It can be written upon by irons or stones. No gems deteriorate except pearls and corals. Pearls grow in fishes, snakes, conches, hogs, bamboos, clouds, and shells ; of these the greatest amount comes from shells. Pearls derived from shells can be pierced, not others. The people of Ceylon can make artificial pearls.

Manikya (or ruby) is the sun's favourite ; it is of red colour, and has the white lustre of indragopa insect.

Markata (or emerald) has the lustre of the feathers of the peacocks. Indranila or sapphire has the colour of deep clouds. Vaidurya has the lustre of cat's eyes and has its particles moving. Pushyaraga or topaz has the brilliancy of gold. Gomeda has strange colour and Pravala or coral has yellowish red colour.

Those who are experts in the study of gems describe that gem as the best which has no pores,

has good colour, is without scratches and spots, has good angles and bright lustre.

The precious stones have *chhaya* and *prabha*. The *Chhaya* is that which attacks, over-powers, and eclipses the colour of other substances. The *prabha* is that which reveals the colours of other substances. The gems that have their appropriate lustre and colour are beneficial to beauty, growth, fame, value, and life.

The gem that is devoid of any defect has its value increased according to its weight, lustre, colours, extent, receptacle, and shape. The gems cannot be cut by iron except by pearls and corals and stones (diamonds). The gem that is light in weight but large in size has great value. ²¹⁴

6. Gems in Arthashastra :

Gems are hexagonal, quadrangular, or circular possessed of dazzling glow. Pure, smooth, heavy, brilliant, transparent, and illuminating : such are the qualities of gems. Faint colour, sandy layer, spots, holes, bad perforation, and scratches are the defects of gems.

The main sources of pearls are oyster-shells and conch-shells. The pearls are obtained from

Tamraparni (a river in the Pandya country); Pand-yakavata (a mountain in Malaya couuntry), Pusha (a river of that name); Kula (a river in the is-land of Simhala); Churna (a river in the Kerala Country); Mahendra ; Kardama (a river in Persia); Srotasi (a river falling in the sea, Barbara) ; Hrada (a pool of water in Barbara); and the Himalayas. That pearl is the best which is big, circular, without bottom, brilliant, white, heavy, soft to the touch, and properly perforated.

V

1. Sixty-four Arts : a Summary.

1. Sixty-four Arts :

A. Twenty three arts are derived from the Vedas through the four Upavedas.

- I. **Gandharva**—(1) Nartana or dancing with appropriate gestures and movements.
- (2) Vadana or playing on musical instruments is also an art.
- (3) The decoration of men and women by dress and ornaments.
- (4) The performance and knowledge of the sundry mimicry and antics.
- (5) The laying out of beds and furnitures and the weaving of garlands.

- (6) The entertainment of people by gambling and various tricks of magic.
- (7) The (knowledge of) different aspects of giving pleasure.

II. Ayurveda.

- (8) The distillation of wines and spirituous liquors from flowers etc.
- (9) The extrication of thorns and the relieving of pain by operating on the wounds of a vein.
- (10) The cooking of food by intermixtures of various tastes.
- (11) The planting, grafting, and preservation of plants.
- (12) The melting and powdering of stones and metals.
- (13) The art using preparations from sugarcanes.
- (14) The knowledge of mixtures of metals and medical plants.
- (15) The knowledge of the analysis and synthesis of metals.
- (16) The preparation of new substances (alloys) out of metals by combinations.
- (17) The preparation of salts.

III. Dhanurveda.

- (18) The use and employment of arms by the proper arrangement of legs.
- (19) Duelling by various artifices.
- (20) The throwing of arms and implements towards some fixed point.
- (21) The formation of battle arrays according to the signals given by musical instruments.
- (22) The arrangement of horses, elephants, and chariots in war.

IV. Tantra :

- (23) The propitiation of gods by various seats and postures.

V. Other Arts :

- (24) The act of driving horses and elephants.
- (25) The act of teaching horses and elephants.
- (26-29) Cleansing, polishing, dyeing or rinsing earthen things, wooden things, stones, and metals.
- (30) Picture-drawing.
- (31) The construction of tanks, canals, palaces and squares.
- (32) The construction of clocks, watches, and musical instruments.
- (33) The dyeing by the application of inferior, middling, and other colours.

- (34) Mechanical operations putting down the actions of water, air, and fire.
- (35) The preparation of boats, chariots, and conveyances.
- (36) The preparation of threads and ropes.
- (37) The weaving of fabrics by various threads.
- (38) The testing of gems as to whether they are good or bad as possessing marks of holes.
- (39) The testing of gold and other metals.
- (40) The preparation of artificial gold and jewels.
- (41) The making of ornaments with gold and other metals.
- (42) Enamelling.
- (43) The softening of leathers.
- (44) The flaying of skins from the bodies of the beasts.
- (45) Milking.
- (46) Churning.
- (47) Tailoring.
- (48) Swimming.
- (49) Cleansing of domestic utensils.
- (50) Washing.
- (51) Shaving.

- (52) Extraction of oil from seeds and fats.
- (53) Ploughing.
- (54) Climbing.
- (55) Flattering.
- (56) The making of vessels with bamboo straws.
- (57) The making of glass vessels.
- (58) The pumping and withdrawing of water.
- (59) The preparation of tools and implements from iron.
- (60) The preparation of saddles for horses, elephants, bulls, and camels.
- (61) The maintenance, entertainment, and nursing of children.
- (62) Whipping criminals.
- (63) Writing in different alphabets.
- (64) Preparation of betels.

VI

1. Characteristics of Hindu Art.

We may briefly sum up the main characteristics of all early Hindu Art. All art in Hindu India is essentially religious. The whole Hindu culture bears in all its phases the marks of religiosity: and art is no exception to the rule. Hindu art

therefore was the flowering of the Hindu religious consciousness in clay, or metals, or stone, or gems. As Shukracharya put it "Even a misshapen image of god is to be preferred to an image of a man however charming."

A second characteristic of Hindu art was the predominance in it of types and suppression of the individual. In the West all art is expected to be the expression of the personality of the artist. But not so here. "An image (made) according to rule (Shastra) is beautiful; no other foresooth is beautiful; some (deem) that beautiful which follows after (their own) fancy, but that not according to the rule (appears) unlovely to the discerning."²⁴⁶ Impersonality is therefore the dominating ideal of all Hindu culture. In literature, art, philosophy, moral conduct, everywhere, the Hindu is called upon to sacrifice completely his private, narrow individuality. The finite is to be merely the expression of the Infinite... Ahankara is of the earth, earthy: only the vulgar pride themselves upon it. Complete self-effacement is therefore the most essential condition of all true artistic creation in India. Here is therefore the source of strength as well as the weakness of Hindu arts and industries. "There is no more remarkable illustration of the

Hindu perception of the relative insignificance of the individual personality than the fact that we scarcely know the name of a single painter or sculptor of the great periods : while it was a regular custom of authors to ascribe their work to better-known authors, in order to give a greater authority to the ideas they set forth." ²⁴⁸ The result is that a few types gain currency and serve to regulate and standardise all subsequent efforts in the same direction. These types are the result of communal rather than individual thought. A few master-minds - the true interpreters of the race - have thus an opportunity to impress their vision on the whole race. The result is the gradual growth of a powerful tradition imposed on generations of artists of diverse talents and individualities. But if all remains as is the case in the West, the expression of personal and transient emotion, we may have now and then the original works of individual genius, but these will not be able to secure that concentrated attention, that enthusiastic response of the people which is the birthright of all works inspired by a living tradition. It is the privilege of a few rare natures to set up the standards to regulate all subsequent efforts. Most men ought to be content to draw inspiration from few set models, but if

they try to be law unto themselves the result will be the multiplication of worthless works. Yet all traditional art lacks the inner principle of life. When the old order gives place to new, and the old conditions radically change, it has not the power to meet the new demands on it. It gradually stagnates till all life, all vitality vanishes from it. Such is unfortunately the case with Indian art at present.

The most fundamental distinction between the arts and industries of modern Europe and the arts and industries of ancient India lies in the fact that while in the West the machine has practically driven out the man everywhere, in ancient India everything was made by hand, and everything therefore was a work of art. Of course there is no comparison with regard to the fine arts: because the spirit of fine art has truly slept in India "since the Aryan genius of the people exhausted itself in the production of the Ramayana and Mahabharata." Here we are concerned only with the industrial arts. Handwork will always remain superior to machine work, because there will always be greater individuality, variety, and artistic finish in the former than in the latter. It is an essential condition of all good art that behind it there should

be the free creative personality of the artist. That is possible in a handicraft. The artist can put his own soul into the work and can always proudly say, "This is my work." But in factories men work as mere cogs in a big machine ; they are dehumanised. Men therefore are degraded, and reduced to the position of machines, driven on by other forces and powers helplessly here and there. Where there is no freedom, no hope, no joy of creation, there can be no self - expression ; and where there is no self - expression, there can be no art. Birdwood picturequely describes the contrast between the handicrafts and machinery. " Outside the entrance of the single village street on an exposed rise of ground, the hereditary potter sits by his wheel moulding the swift, revolving clay by the natural curves of his hands. At the back of the houses, which form the low irregular street, there are two or three looms at work in blue, and scarlet, and gold, the frames between the accacia trees, the yellow flowers of which drop fast on the webs as they are being woven.

In the street the brass and coppersmiths are hammering away at their pots and pans, and further down in the verandah of the rich man's house, is the jeweller working rupees and gold mohurs into

fair jewellery, gold and silver ear-rings, and round
 tires like the moon, bracelets, and tablets, and
 nose-rings, and tinkling ornaments for the feet,
 taking his designs from the fruits and flowers
 around him, or from the traditional forms represented
 in the paintings and carvings of the great temple,
 which rises over the groves of mangoes and palms
 at the end of the street above the lotus-covered
 village tank. At half-past three or four in the
 afternoon the whole street is lighted up by the
 moving robes of the women going out to draw water
 from the tank, each with two or three water-jars
 on her head; and so while going and returning in
 a single file, the scene grows like Titian's canvas
 and moves like the stately procession of the Pana-
 thenaic frieze. Later the men drive in the mild grey
 kine from the moaning plain, the looms are folded
 up, the coppermiths are silent, the elders gather in
 the gate, the lights begin to glimmer in the fast
 falling darkness, the feasting and the music are heard
 on every side, and late into the night the songs
 are sung from the Ramanayana or Mahabharata.
 The next morning with the sunrise, after the simple
 ablutions and adorations performed in the open air,
 the same day begins again. This is the daily life
 going on all over Western India, in the village

communities of the Deccan, among a people happy in their simple manners and frugal ways of life, and in the culture derived from the grand epics, in which they live and move and have their daily being, and in which the highest expression of their literature, art, and civilisation has been stereotyped for 3,000 years.

But of late years, these handicraftsmen for the sake of whose works the world has been ceaselessly pouring its bullion for 3,000 years into India, and who for all the marvellous tissues and embroidery they have wrought, have polluted no rivers, deformed no pleasant prospects, nor poisoned any air, whose skill and individuality the training of countless generations has developed to the highest perfection,—these hereditary handicraftsmen are being everywhere gathered from their democratic village communities in hundreds and thousands into the colossal mills of Bombay to drudge in gangs, for tempting wages, at manufacturing piece-goods, in competition with Manchester, in the production of which they are no more intellectually and morally concerned than the grinder of a barrel organ in the tunes turned out from it.

I do not mean to deprecate the proper func-

tion of machines in modern civilisation, but machinery should be the servant and never the master of men. It cannot minister to the beauty and pleasure of life, it can only be the slave of life's drudgery; and it should be kept rigorously in its place in India as, well as in England. When in England machinery is by the force of cultivated taste and opinion no longer allowed to intrude into the domain of art manufactures which belongs exclusively to the trained mind and hand of individual workmen, wealth will become more equally diffused throughout society, and the working classes, through the elevating influence of their daily work, and the growing respect for their talent, and skill, and culture, will rise at once in social, civil, and political position, raising the whole country to the highest classes with them; and Europe will learn to taste some of that content and happiness in life which is to be still found in the pagan East, as it was once found in pagan Greece and Rome. " 248

IV. Conditions of Production : Labour and Capital.

It is necessary to inquire into the conditions favourable to the growth of arts and industries in India.

I

I Advance in applied Chemistry: The success of India in the field of industrial production was in the first place due to her advance in applied chemistry. "It may also be noted in passing that it was her wonderful achievements in applied chemistry more than her skill in handicraft which enabled India to command for more than a thousand years (From Pliny to Tavernier) the market of the East as well as the West, and secured to her an easy and universally recognised preeminence among the world in exports and manufactures. Broadly speaking, there were three great discoveries in applied chemistry to which India owed her capture of the world markets, viz. (1) the preparation of fast dyes for textile fabrics by the treatment of natural dyes like manjistha with alum and other chemicals; (2) the extraction of the principle of indigotin from the indigo plant by a process which however crude, is

essentially an anticipation of modern chemical methods'; (3) the tempering of steel 'in a manner worthy of advanced metallurgy, a process to which, the mediaeval world owed its Damascus swords.'¹

2. Skill in Handicrafts : Special features :

The factor of the greatest importance next to the discovery of chemical process in the success of the industrial or decorative arts of India was the remarkable skill in the handicrafts which the Hindus had developed from the earliest times. Birdwood has given a graphic picture of "Pottery in ancient India." It gives us an insight into the ways and means which the artist resorts to, and the conditions under which he works. "Truest to nature, in the directness and simplicity of its forms and their adaptation to use, and purest in art, of all its homely and sumptuary handicrafts is the pottery of India.

Unglazed pottery is made everywhere in India and has been from before the time of Manu...

The greatest secret of his mastery is the almost intuitive habit of the native of India of representing natural objects in decoration in a strictly conventional manner, that is to say symmetrically and without shadow. In this way the

outline of the form ornamented is never broken up...It is thus that the Indian potter maintains inviolate the integrity of form and harmony of colouring and the perfect unity of purpose and homogeneity of effect of all his work. The mystery of his consummate work is a dead tradition now, he understands only the application of its process, but none the less must it have been inspired in its origin by the subtlest interpretation of nature. The potter's art is of the highest antiquity in India and the unglazed water vessels made in every Hindu village are still thrown from the wheel in the same antique forms represented in the Buddhist sculptures and paintings....

The Indian potter's wheel is of the simplest and rudest kind. It is a horizontal fly - wheel, two or three feet in diameter, loaded heavily with clay around the rim and put in motion by the hand and once set spinning, it revolves for four, five or seven minutes with a perfectly steady and true motion. The clay to be moulded is heaped on the centre of the wheel, and the potter squats down on the ground before it. A few vigorous turns and away spins the wheel, round and round, and still silent as a 'sleeping' top, while at once the shapeless heap of clay begins to grow under the potter's hand

into all sorts of faultless forms of archaic fictile art, which are carried off to be dried and baked as fast as they are thrown from the wheel. Any polishing is done by rubbing the baked jar and pots with a pebble. There is an immense demand for these water - jars, cooking pots, and earthen frying-pans and dishes...

We cannot overlook this serenity and dignity of his life if we would rightly understand the Indian handicraftsman's work. He knows nothing of the desperate struggle for existence which oppresses the life and crushes the very soul out of the English working man. He has his assured place, inherited from father to son, for a hundred generations, in the national church and state organization, while nature provides him with everything to his hand but the little food and less clothing he needs, and the simple tools of his trade. The English working man must provide for house rent, coals, furniture, warm - clothing, animal food and spirits, and for the education of his children, before he can give a mind free from family anxieties to his work. But the sun is the Indian workmen's cooperative landlord, coalmerchant, upholsterer, tailor, publican, and butcher; the head partner from whom he gets almost everything he wants and

free of all cost but his labour contribution towards the trade union village corporation of which he is an indispensable and essential member. This at once relieves him of an incalculable dead weight of cares, and enables him to give to his work which is also a religious function that contentment of mind and leisure, and pride and pleasure in it for its own sake which are essential to all artistic excellence." 2

3. Economic Security of the Artist :

Here we get one secret of all excellent production and hence of excellent Indian production too. The fundamental condition of all true art is that the *soul of the artist must be free*. In order that the artist may be able to give the best of his mind to his work, it is absolutely essential that he should be assured of a secure and dignified economic and social status. No man can serve both god and mammon ; neither can he follow the highest impulses in him in a free and unfettered way if he has got to devote all his thought to what shall he eat, what shall he drink, and wherewithal shall he be clothed. Unless the fundamental economic necessities of the artist are satisfactorily met, we cannot expect him to rise to the height of his genius and opportunities. There is this fundamental difference in the

modern western and ancient Indian economic organisation, that in the former intense competition that dominates industry makes it impossible for the workers there to look much to the perfection of their work, while in the latter we find that the artists were not left to the tender mercies of an unappreciative public, but assured a secure place in society so that they may be free to do their work in the best possible way.

4. Leisure : a Condition of excellent production :

Dr. Coomarswamy writes : " There is, for example, in the India Museum an engraved jade bowl, on which a family in the employ of the emperors of Delhi was engaged for three generations. In these days when churches are built for contract and finished to the day or week, it is difficult to realise the leisurely methods of the older craftsmen. Do not mistake leisure for laziness ; they are totally and entirely different things. The quality of *leisure* in old work is one of its greatest charms, and is almost essential in the work of art. Haste and haggling have now almost destroyed the possibility of art, and until they are again eliminated from the craftsman's work it will not be possible to have

once again such works as he once gave to his fellows. In other words, society must either decide to do without art, as it mostly does decide at the present day, or else it must make up its mind to pay for art and endow the craftsman. You cannot both have art and exploit it." 3

5. Products vs. Producers :

The present economic organization of the West is favourable to mass production. Machine-factory can throw on the market enormous quantities of things of uniform pattern and shape. It therefore prefers quantity to the quality of work. It sacrifices individuality and finish of work to the production of standardised goods in large numbers. It caters to the taste of grovelling multitude : but it does not try to elevate their taste by producing things of real beauty. But in all work done by hand the individual is free to throw his soul into his little piece of work. In the former system the work is everything, the worker nothing. The worker or factory labourer is a mere cog in a machinery which is incomprehensible to him. But as Dr. Mookerji says: " Hand-work largely allows the expression of ideals. The artisan whilst he swings the hammer, works on the wood, or casts the

shuttle, feels the joy of a new creation and the happiness of labour. His handwork is beautiful and happy. " 4

6 Autonomy and Dignity of Labour:

The Indian artisan in old times was a free and dignified being who considered it a degradation to work for hire. Autonomy was his privilege and his pride. Thus Manu says : " Works which make one dependent on others, he must studiously avoid. Works which are entirely under his own control he must diligently pursue. Liberty is happiness and dependence is misery. These know to be the general definitions of happiness and misery. " 5 The law-giver recognised the essential sanctity of all work when he says : " The hand of the artisan is always pure. " 6 The same is the evidence of the Pali literature " It will have been seen however that the mass of the people, the villagers, occupied a social grade quite different from, and far above, our village folk. They held it degradation to which only dire misfortune would drive them, to work for hire. They are proud of their standing, their family, and their village. And they are governed by a headman of their own class and village, very proba-

ably selected by themselves in accordance with their own customs and ideals. ”7

7 High position of labour in society:

The Indian artisan therefore was a valuable part of ancient Aryan Society, and an organic element in the national life, figuring in it either as a member of the village community, or as a member of a guild of merchant craftsmen in a great city ; or as the servant of some king or great man. The village artisan was interwoven in the very texture of village life and was given some share of agricultural produce or a rent - free piece of land. But even in the city his position was fairly dignified at least in the early period of Aryan civilisation. In the Vedic times the Rishis themselves are represented as preparing the sacrificial posts and altars. It is interesting to read the following story from the Kathakosha. A prince, named Amardatta fell in love with a beautiful statue and related the fact to his friend Mitrananda. Mitrananda then asked a merchant who visited the very temple where they had seen this statue : “ My Lord, who had this temple made ? Who was the workman employed on it ? Who has so much artistic skill ? Did he make this statue by his

own artistic invention only, or did he carve it to represent some person?" The merchant said "I had this temple made. It was made by an architect residing in the city of Sopara, named Suradev." Mitrananda crossed the sea, and went to the city of Sopara. There he *put on a splendid garment* and *taking a present in his hand* went to the architect's house. The architect showed him great regard and asked him the cause of his coming. On Mitrananda's asking him the fact about the statue, he said: "The statue is copied from Ratnamanjari, the daughter of king Matrasena in Ujjayini." Subsequently Amar. datta made Ratnamanjari the jewel of his harem, Mitrananda the head of his cabinet, and the merchant Ratnasagara was appointed royal merchant. ⁸.

8. Payment of labour : a characteristic feature :

The Indian economic system relying more on status than on contract, was more favourable to artistic production than the present industrial organisation of the West which is based on competition. It is interesting to note that the way in which the artisan was rewarded here

brought about a happy combination of agriculture and industry in the same hands. The artisans instead of being degraded to the class of landless proletariat rose to the position of considerable status and dignity in their own villages. They were not hewers of wood and drawers of water in other's estates, but masters in their own house. "Living in a society organised on the basis of personal relations and duties which descended in each family from generation to generation instead of belonging to a society founded on contract and competition, their payment was provided for in various ways, of which the money payment was the least important and most unusual. The amount of money in circulation in the villages was, indeed almost negligible, barter and personal service taking the place of money payments. Wealth was hoarded if at all rather in form of jewellery, than of money. Property consisted in having several years' provision of grain in one's granary... The payment of craftsmen was either a payment in kind or a grant of land, besides perquisites on special occasions. For customary services the craftsmen were repaid at harvest-time, receiving a fixed proportion of sheaves of grain from

the crop collected on the threshing floor, or they might be given a share of communal land. In the last case it followed that every a man was cultivator and directly dependent upon the land for his subsistence. " 9

9. Absence of Inequalities on a large scale :

One factor which differentiates happily the economic system of the East from the modern Western system is the comparative absence here of the gross inequalities of the rich and the poor, the haves and havenots which disfigure the economic life of Europe and America. The perpetual tyranny of the acquisitive impulse is fatal to a true growth of the creative impulse in man. In the West, the workers are borne deep by the consciousness of injustice done to them by the social organisation and consequently think too much of their economic position and too little of their artistic possibilities. But the communalistic organisation of industry here secures the worker from all anxiety with regard to his position in life and besides ensures a degree of justice and fairness in the distribution of the best things of life.

10. Patronage of the State :

It was above all recognised that all culture depends for its existence and growth upon the protection of the State, and art was no exception to this. This made it possible for all art to be truly aristocratic. The plain rule of demand and supply brings down the artist to the level of the public. The principle of patronage enables the artist to take the people to his level. The only interest which should be uppermost in the artist's mind is the interest of his art, the perfection of his work. Not the favour of the multitude, not vulgar success, not the daily market demand, but the soul of the art must be the decisive factor in the execution of all the works of art. "The difference in the European and Asiatic methods of rewarding art manufacture is indeed the original reason why so little art is found in European manufacture. Thus the carpet jury of the Paris exhibition of 1878 based their awards as much upon the quantity produced by each competing manufacture as upon the quality in point of beauty and technical excellence of their productions, and positively gave the highest honours to those who could show the largest amount of business done

in their trade. In the East...the princes and great nobles and wealthy gentry, who are the chief patrons of these grand fabrics, collect together in their own houses and palaces all who earn a reputation for superiority in any manufacture. These skilled artisans receive a fixed salary and daily rations and are so little hurried in their work that they have plenty of time to execute private orders also. Their salaries are continued even when through age or accident they are past work ; and on their death they pass to their sons, should they have become skilled in their father's art. Upon the completion of any extraordinary work it is submitted to the patron and some honour is at once conferred on the artist and his salary increased. It is under such conditions that the best art work of the East has always been produced."

11. Caste favourable to early growth :

The caste, the guild, and the village community, were institutions in many ways favourable to the creation or conservation of true art. The institution of caste to a very great extent owes its origin as well as growth to economic needs. Society was organised very early on the

basis of the fact that all men are not equally fitted for all things. It was therefore necessary to specialise and that could not be done as long as they were absolutely free to do anything they chose. In early ages when society began its work of civilization, the reign of status was absolutely necessary. Men should be forced by some sort of arrangement to keep to fixed paths. Perfect fluidity then would have meant an early arrest of the work of civilisation. Religious sanction alone would keep a man in the path ordained for him; and the hereditary principle triumphed. It is our firm belief that to the triumph of this principle we owe almost the whole of our Hindu civilisation. Particularly the professional groupings which were thus evolved led to the intensive development of arts and industries. "Better one's own duty even without distinction, than the duty of another even with excellence; in another's duty danger lies." Each man has to do his ordained work through which alone he can spiritually progress. The triumph of the hereditary principle ensured the perpetual transmission of trade and art secrets from father to son. It is possible for the young child to imbibe unconsciously the elementary lessons of his father's art in his very young days: and he grows very

easily into his father's business. But the caste meant something more. It was a sort of trade union, an economic unit regulating the work as well as wages of its members. " Each caste is to some extent a trade guild, a mutual assurance society, and a religious sect. As a trade union it insists on the proper training of the youth of its craft, regulates the wages of its members, deals with trade delinquents, supplies courts of arbitration, and promotes good fellowship by social gatherings. The fabrics of mediæval India and the chief local industries of our own day were developed under the supervision of caste or trade guilds of this sort. " ¹¹ It must be remembered, however, that as long as the castes marked the presence of boundaries which were elastic, and men could go from one profession to another, this helpful activity of the castes was prominent.. But when the castes became stereotyped preventing the possibility of healthy changes, a sort of ossification was bound to take place. The freedom of movement which is the very life of a healthy economic order disappears : and every man becomes completely a creature of his past karma and not a forger of his own destiny.

12. Guild : a factor in production :

The guilds also helped the regulation of indu-

tries in various ways. Here we will refer to one function of the guilds. It was one of the chief functions of the guilds in India as well as in Europe, to maintain the *standard* of quality, both of material and design. The ancient Indians believed in the regulation of industry now by the State, now by the guild, now by the caste. The following quotation shows what an important part this principle of regulation played in the growth of genuine and the weeding out of useless art. "The State exercised a vigorous supervision over the quality of the raw material and the manufactured article. In the good days of the shawl-trade no spurious wool was brought in from Amritsar to be mixed with the real shawl-wool of Central Asia, and *woe betide the weaver who did bad work or the silversmith who was too liberal with his alloy. There is no such supervision nowadays.* Competition has lowered prices, and the real masters of weaving ...have to bend to the times, and supply their customers with cheap, inferior work. Ask an old artist in *papier-mache* to show the work which formerly went to Kabul and he will show something very different from the miserable trash which is now sold. But the Pathans of Kabul paid the price of good work, the visitors to the valley want cheap work

and they get it." ¹² Here is the evidence of Birdwood. "Formerly...a great industry in gold embroidered shoes flourished at Lucknow. They were in demand all over India for the native kings of Oudh would not allow the shoe-makers to use any but pure gold wires on them. But when we annexed the kingdom, all such restrictions were removed, and the bazaars of Oudh were at once flooded with the pinchbeck embroidered shoes of Delhi, and the Lucknow shoe-makers were swept away for ever by the besom of free trade." ¹³

To prevent this deterioration of the quality of goods some agency like the guild, the caste, or the State is a real necessity. Modern tendency is to allow men to produce what they like and take their chance in the open market. Hence ensues a competitive struggle not for excellence always, but for cheapness certainly. Here also we see the result of competition...the degradation of standard. Works of art are not meant to be a drug in the market; they would not spring up in large quantities at the call of the market. We may therefore advocate the adoption of protection with Dr. Coomarswamy, the *protection of standard* not by the taxation of imports or exports but by the absolute prohibition

of the importation or manufacture of any goods whose quality falls below the standard established. Not cheapness but excellence, not the satisfaction of the vulgar instinct for gaudiness, but the satisfaction of truly cultured aesthetic instincts of the few : should regulate the production of genuine art ; and the doctrine of *laissez faire* in its application in this field means the destruction of all pure art.

13. Village Community : Land tenure :

India's most formidable defence against all adverse influences lay in its village communities. We again invoke the emphatic authority of that sympathetic critic of India's arts - Sir Birdwood, who attributes the conservative power of Indian culture to the system of land - tenure developed by the Hindus. " The cause of all his (the Indian artisan's) comfort, of his hereditary skill, and of the religious constitution under which his marvellous craftsmanship has been perfected is the system of land tenure which has prevailed in India, and stereotyped the social condition and civilisation of the country from the time of the Code of Manu...The system of peasant proprietorship may possibly contribute indirectly to retard

the advance of a country, even where it does not conduce directly to the petrification of its civilisation as in India. Under it the Hindu ryot has become so strongly attached, by the most sacred and deeply rooted ties, to the soil that, rather than relinquish his hold on it, he will burden himself and his heirs for generations; and gradually under the Hindu practice of inheritance, the holdings became so minutely subdivided and over-burdened by mortgages, that extended cultivation, and high farming are made almost impossible...Then again, under this system as it has been elaborated in India, there is a great loss of personal and national energy. The whole community is provided for; every man has in it his ordered place and provision. There is no stimulus to individual exertion, and the mass of the people are only too well contented to go on-for ever in the same old-fashioned conservative ways as their fathers from time immemorial before them. In England the law of primogeniture, while so hard on younger sons, by throwing them on their own resources, to provide for themselves in the free professions and in the commerce and the colonies, has had the most beneficial influence on the energy of the race, and the growth of the

wealth and political liberties and power of the country during the last two hundred years. Primogeniture, also, has given England a highly cultivated and powerful governing class...The whole of this indictment against the *ryotwari* tenure, prevailing over the greater part of India, may be conceded, but we owe to it the conservation through every political change of the primitive arts of India and when it becomes disorganised and perishes, they too will sink and pass away for ever. Popular art cannot exist in the face of the stark competition ever fomented by the development of external commerce in all things, including the possession of the soil to which competition some theorists would sacrifice even national existence...There can in fact be no popular art without popular traditions, and traditionary arts can arise only among a people whose social and municipal institutions are based in perpetuity on a democratic organisation of their inherent right and property in national soil, such as is secured to the people of India, by the *ryotwari* tenure. This it is which has created for them the conditions of society, so picturesque in its outward aspects, so unaffected and fascinating in its inner life, in which the arts of India originated,

and on the permanence of which their preservation depends. For leagues and leagues round the old Maratha cities of Poona and Satara, stretch fields of corn and pulse and oil-grains, the livelier verdure of the rice fields, following the course of irregular *nullahs*, like a green thread wrought in gold; and rich orchards and high groves of mango mark the sites of the villages hidden in their shade. Glad with dawn the men come forth with their work, and glad in their work they stand all through the noontide, sitting at the well, or shouting as they reap and plough, and when the stillness and the dew of evening fall upon the land like the blessing and the peace of God, the merry-hearted men gather with their cattle, in long winding lines, to their villages again... Here is no 'indigent starveling among mighty heaps.' The accumulation of immoderate wealth is impossible.

' Yet far aloof is irksome poverty.'

And are not these the conditions under which popular art and song have everywhere sprung, and which are everywhere found essential to the preservation of their pristine purity? To the Indian land and village system we altogether owe the hereditary cunning of the Hindu

handicraftsman. It has created for him simple plenty, and a scheme of democratic life, in which all are co-ordinate parts of one undivided and indivisible whole, the provision and respect due to every man in it being enforced under the highest religious sanction and every calling perpetuated from father to son by those cardinal obligations on which the whole Hinduism hinges. India has undergone more religious and political revolutions than any other country in the world; but the village communities remain in full municipal vigour all over the Peninsula. Scythian, Greek, Saracen, Afghan, Mongol and Maratha have come down from its mountains, and Portuguese, Dutch, English, French, and Dane up out of its seas, and set up their successive dominations in the land ; but the...villages have remained as little affected by their coming and going as a rock by the rising and falling of the tide ; and there, at his daily work, has sat the hereditary village potter amid all these shocks and changes, steadfast and unchangeable for 3,000 years, Macedonian, Mongol, Maratha, Portuguese, Dutch, English, French, and Dane of no more account to him than the broken potsherds lying round his wheel."

The wonderful continuity which we see running through the development of the Indian arts and crafts from the earliest Vedic Period down to the present day, is its most remarkable feature. And a feature equally striking is the impress of unity to be seen in all Indian works of Art all over India. Not that variety is not there. But what we notice is that the characteristically Indian stamp is never missing. Thus the thread of community is seen running not only over centuries of times, but also over the whole of this vast country. "The life and arts of India as in a lesser degree of the East generally are still the life and arts of antiquity. This is their supreme charm. It is said that the the continuity of the social life and with it of the arts, in India has been owing to the isolation of the vast peninsula which is supposed to be separated from the Himalayas and the sea from other countries. But it is not so. India lies in the track of the great commerce which has always subsisted between the East and West, and excepting the Bhils, Gonds, Kols, Khonds, and other savage aborigines, it is through the Himalayas and the Suleman mountains that it has received its entire population, Indo-Chinese,

Dravidian, Aryan, Scythic, Afghan, and Mongol (Turcoman)...Indian art has borrowed from Turanian, Dravidian, Greek, Sassanian, Mongol, and European sources...But the assimilative power of the Hindus is as remarkable as their receptive power, and in the hands of their hereditary craftsmen everything they copy in time assumes the distinctive expression of Indian art. This is really owing to the homogeneous unity given to the immense mixed population of India by the Code of Manu. It is a population of literally 'teeming millions,' nearly all of one way of life and thought, and everything brought into contact with it, is at length subdued to its predominant nature...Moreover the Code of Manu has secured in the village system of India a permanent endowment of the class of hereditary artisans and art workmen, who of themselves constitute a vast population, and the mere touch of their fingers trained for 3,000 years to the same manipulation, is sufficient to transform whatever foreign work is placed in their hands, 'into something rich and strange,' and characteristically Indian." 14

14. Indian Genius for Imitation :

Thus we come to the native ingenuity and skill and training of the Indian craftsmen. The most remarkable power of the Indian artist is his genius for imitation. This has drawn the attention of both Indian as well as foreign writers. An account of the fabrication of imitation jewellery is found in the *Mrichhakatika*. The question arises with regard to the identity of certain ornaments produced in a court of justice. "Judge-Do you know these ornaments? Mother- Have I not said? They may be different, though like. I cannot say more: they may be imitations made by some skilful artist. Judge - it is true, Provost, examine them; they may be different though like; the dexterity of the artist is no doubt very great and they readily fabricate imitations of ornaments they have once seen, in such a manner, that the difference shall scarcely be discernible." In the *Shukraniti* also we read; "There are natural defects in gems, but metals have artificial defects. So the wise men should discriminate their value by carefully examining them." ¹⁵ The preparation of imitation gold and silver is one of the 64 arts. ¹⁶ A rule for testing

the metals is given. - " If two pieces of a metal - one pure and the other suspected of alloy - be successively passed through the same hole, and threads of equal length be drawn out of them and weighed and if the weights of each are equal then the metal is unalloyed, otherwise not. " 17

The evidence of foreign writers confirms this fact. " With a view to show their ingenuity in work of art, he (Nearchos) relates that when they saw sponges in use among the Macedonians, they imitated them by sewing heirs, thin strings and thread into wool : when the wool has been pressed into feet, they partly carded it and partly dyed it with colours. Many of them also quickly became makers of currycombs and of vessels for oil. " 18 Terry in his Voyage to the East Indies (1655) writes : " The natives there show very much ingenuity in their curious manufactures as in their silk stuffs which they most artificially weave, some of them very neatly mingled either with silver or gold or both... Their skill is likewise exquisite in making of cabinets, boxes, trunks, and standishes curiously wrought, within and without inlaid with elephants' teeth, or mother - of - pearl, ebony, tortoise - shell, or wire ; they make excellent cups

and other things of agate, or cornelian and curious they are in cutting of all manners of stones, diamonds as well as others. They paint staves of bedsteads, chests, or boxes, fruit dishes, or large chargers extremely neat, which when they be not inlaid, as before, they cover the wood first being handsomely turned with a thick gum on, then put the paint on, most artificially made of liquid silver or gold, or other lively colours, which they use. They are also excellent at limning and will copy out picture they see to the life....The truth is that the natives of that monarchy are *the best apes for imitation in the world*, so full of ingenuity that they will make any new thing by pattern how hard soever it may seem to be done."

15. Atmosphere of the Home:

This genius for imitation as well as other qualities which led to the perfection of the Indian Art, were fostered by two factors; the atmosphere of home and education. "Every house in India is likewise a nursery of the beautiful. In the meanest village the mother of the family will be found with her daughters engaged in spinning or weaving and in the proudest native houses of the great polytechnical cities, the mistress, with her maid—

servants may be seen at all hours of the day embroidering cloth in coloured silks, and silver, and gold thread, reminding the visitor of similar household scenes in ancient Rome before slaves came during the pampered period of the Caesars to be employed in such work. There is thus a universally diffused popular appreciation of technical skill and taste in promoting the unrivalled excellence of the historical art handicrafts of India." 19

16. Technical Education :

There were various agencies by which these arts were imparted to new generations of pupils ; the pupil used to learn his art or craft from his father ; this was perhaps the most usual way. " Once upon a time when Brahmadatta was king in Benares in Kasi the Bodhisatta was born into a trader's family. When he was grown up he used to travel about trading with 500 carts. " 20 " Once on a time...the Bodhisatta came to life as a conch - blower and went up to Benares with his father to a public festival. There he earned a great deal of money by his conch - blowing. " 21 " Once on a time.. the Bodhisatta was born into a family of doctors skilled in the cure of snake - bites and when he grew up he practised for a livelihood. " 22

Another system was for a pupil to go to a famous teacher and by becoming an apprentice at his place, to learn up the secrets of the trade. Thus we find the prince Kusha becoming apprentice with a potter, a gardener, and so on. Here are some illustrations of the way in which education was imparted. "Just, O king, as a clever archer first in regular succession teaches his pupils at the training ground the different kinds of bows, the manner of holding the bow up and of keeping it in a firm grasp and of bending the fingers and of planting the feet and of taking up the arrow, and of placing it on the string, and of drawing it back, and of aiming at the mark, and thus of hitting a man of straw, or targets made of the Khanaka plant, or of grass, or of straw, or of masses of straw, or of masses of clay, or of shields, — and after introducing them to the king, he gains the reward of highbred chargers and chariots and elephants and horses and money and corn and real gold, and slaves and wives and lands." ²³ "Just, O king, as a doctor or a surgeon first procures for himself a teacher, either by the payment of fees, or by the performance of service, and then thoroughly trains himself in holding the lancet, in cutting, marking, or piercing with it, in extracting darts, in cleansing

wounds, in causing them to dry up, in the application of ointments, in the administration of emetics and purges and oily enemas, and when he has thus gone through training, served his apprenticeship, made himself skilful, does he visit the sick to heal them." 21

There was a young man Givaka living with a royal family. He thought, "In these royal families, it is not easy to find one's livelihood without knowing an art. What if I were to learn an art?"

At that time there lived at Takkasila a world-renowned physician. Wandering from place to place, Givaka went to him. "I wish to learn your art, doctor." "Well friend Givaka, learn it." And Givaka learnt much and learnt easily and understood well and did not forget what he had learnt. And when seven years had elapsed Givaka said, "I have studied now for seven years and I do not see the end of this art. When shall I see the end of this art?" The doctor said, "Very well, my dear Givaka take this spade and seek roundabout Takkasila a yojana on every side, and whatever plant you see which is not medicinal, bring it to me."

"I have been seeking, doctor all around Takkasila a yojana on every side, but I have not seen anything that is not medicinal." "You have done your

learning my good Givaka, this would be for your acquiring a livelihood." 25

In the Smritis we meet with few rules regulating the relations between teachers and pupils. Education was regarded as consisting of two main branches : those of science and art. " Science is declared to be a knowledge of one of three Vedas ; for the purpose of acquiring such knowledge he should pay obedience to the spiritual teacher as ordained in law. Arts (consisting of) work in gold, base metals sand the like, and the art of dancing and the rest are called human knowledge ; he who studies them should do work at his teacher's house." " If a young man wishes to be initiated into the art of his own craft, with the sanction of his relations, he must go and live with a master, the duration of his apprenticeship having been fixed. The master shall teach him at his own house and feed him. He must not employ him in a work of different description and treat him like a son. If one forsakes a master, who instructs him, and whose character is unexceptionable, he may be compelled by forcible means to remain (at the master's house) and he deserves corporal punishment and confinement. Though his course of instruction

be completed, an apprentice must continue to reside at the house of his master till the fixed period has expired. The profit of whatever work he may be doing there belongs to his master. When he has learnt the art of his craft within the (stipulated) period, the apprentice shall reward his master as plentifully as he can, and return home after having taken leave of him. Or a certain fee having been agreed upon and the skill of the pupil examined, the apprentice shall take (his fee) and shall not go to live in the house of another person. ”²⁷

Under this system, the apprentice and the master were bound to each other for a fixed period. Now there is a list of duties, which each owed to the other. The master had to entertain the student in his own house at his own expense and to treat him like his own son. Nor was it possible for him to employ his pupil in any other work. The pupil on his part had to be all humility and obedience towards his teacher. “ Science like a current of a stream is constantly advancing towards the plain. Therefore, let one studying science be humble towards his teacher. ”²⁸ He had to surrender to his master his earnings from his newly acquired skill during the period of his

apprenticeship.²⁹ He was asked not to desert his teacher whose character was unexceptionable : otherwise he would be forcibly brought back and punished. But grave dereliction of duty on the part of a teacher justified a student to rise up in revolt against him. A pupil was authorised to oppose a teacher who was proud and who had no discrimination of right and wrong. At the end of his studies the pupil had to give his fees or dakshina to his guru and if he was still retained then the first claim on his services belonged to his guru who would pay him his charges.

It was a simple organisation, but some idea of its efficiency could be only had if we remember that it was this system which led India to signal success in the field of arts and industries. The foundations of that great industrial and manufacturing system which enabled India to command the markets of the East as well as the West, were laid in this educational organisation of the ancient Hindus. There were no very great polytechnic institutions in ancient India. A few plain rules guided the teachers and the students of arts in those days. The essence of the whole ancient educational system of India was the presence there of the vital bond of love and sympathy between the teacher and his

pupil. It was not a system of mechanical transmission of facts from men to men. The personal ties which electrified both sides with mutual love were all-important. That atmosphere of sympathy, that depth of intimacy alone would stimulate each one to his best and the pupil will learn almost instinctively the highest trade secrets from his loving teacher. The question is often discussed whether the school or workshop is a more important agency in imparting technical education. India's answer was that life in the workshop under the constant guidance of the teacher and in presence of the actual work alone would successfully make of the young novice, a real practical expert in his business. Dr. Mookerji well points out the distinguishing traits of our indigenous schools: "The pupil stands in a peculiar relation to his master, a sacred relation of devoted personal service and attachment in which alone can the learner best imbibe and most naturally and spontaneously assimilate the special excellencies of his teacher, his true 'inward' method, nay even his trade secrets which can no longer be hidden from one whom he has adopted as his son. The very intimacy and depth of the personal relationship between the teacher and the taught solves sub-

stantially the difficulties of the educative process, which is impossible in the case of the busy professor at a modern technical school, where he is concerned with his students for a few hours in the week, and has no opportunity of associating them with his main business in which he is called upon to show his real worth and exercise his best talent. And this brings us to the other aspect of our indigenous organisation, viz. training in the actual workshop where the teaching is learnt from the very beginning, and in relation to the real things, difficulties, and problems and primarily by service, by personal attendance on the master. And it is not only technique that is learnt but something far more valuable; in the workshop there is life itself, besides mere plant and tools, for the workshop is part of a home which relieves its mechanical monotony and places the pupil in touch with life and its difficulties, human relations, culture, and religion, whereby his heart is trained as much as his hand - a thing which is as necessary to art as technique itself." 30

17. Religious ideas : a governing influence :

Thus we see that almost every feature of ancient economic organisation of India is peculiar

to herself. Certainly a great gulf is fixed between the essentially secular and soulless economic system of the West and that of India which always thought and felt in terms of human life and spirit. Religious ideas which are severely eschewed from the modern economic science of the West substantially influenced the whole life of the ancient Aryan. In the first place, we find that every man is born into his trade or art. Barring certain exceptional epochs, the tendency of the oriental culture in India was to perpetuate the tyranny of status in society. Once an agriculturist, always an agriculturist. Caste fundamentally determines a man's economic possibilities. But what was the idea behind the caste? The idea of *Karman* was responsible for a man's present caste and destiny; how was he to get away from it? Surely this belief successfully checks the growth of serious discontent in backward classes; but it is also responsible for that very reason for their stagnation and decay. The present social order becomes very sacred and absolutely unalterable. It is the work of fate—their own past *Karman*. But if to some extent the belief in *Karman* led to inactivity, it also led in other ways to a healthy rivalry in excellence.

in one's business. The present Karman will decide not only a man's prospects in this life but also his future in other lives. "Builders that build houses thus, after their death will be reborn in a royal family; painters if they make images accordingly in noble families...become rulers and nobles..."³¹

The Indian without his God is nowhere. In arts and industries he has to draw inspiration from the artist's special tutelary deity - Vishwakarma. He was the "lord of the arts, the carpenter of the gods, the fashioner of all ornaments, who formed the celestial chariots of the deities, on whose craft men subsist, and whom, as a great and immortal god, they continually worship." "The Indian craftsman conceives of his art not as the accumulated skill of ages, but as originating in the divine skill of Vishwakarma, and revealed by him. Beauty, rhythm, proportion, idea have an absolute existence on an ideal plane, where all who seek may find. The reality of things exists in mind, not in the detail of their appearance to the eye. Their inward inspiration upon which the Indian artist is taught to rely, appearing like the still small voice of a god, that

was conceived of as Vishwakarma. He may be thought of as that part of divinity which is conditioned by a special relation to artistic expression ; or in other way, as the sum total of consciousness, the group soul of the individual craftsmen of all times and places..." 32

II

To get further insight into the fundamental conditions of production in ancient India, we ought to acquire some idea of the position of labour and its relation to capital. Here it is important to note that different types of labour are recognised by ancient writers. The highest types of skilled labour have already been dealt with. The Indian artists and even craftsmen form a comparatively dignified and socially important class, the class next to the above was the class of Shudras and slaves. We will now take the last two classes,

1. Labour problem : Classes of Servants :

Different classifications of servants are to be found in the ancient books. "The sages have

distinguished five sorts of attendants according to law. Among these are four sorts of labourers; the slaves (are the fifth category), of which there are fifteen species. A student, an apprentice, a hired servant, and fourthly an official; these must be regarded as labourers; slaves are those born in the house and the rest. The sages have declared that the state of dependence is common to these, but that their respective position and income depends on their particular caste and occupation."³³ "They (servants) are pronounced to be of many sorts, according to their particular caste and occupation; and four-fold, according as they serve for science, human knowledge, love, or gain."³⁴ This is Brihaspati's classification; it virtually repeats Narada's view, with some difference.

2. Kinds of payment :

There are two leading kinds of payment: the fixed wages and the share of the gain. Wages were again distinguished as time and piece-wages. "The servant for pay is declared to be of many sorts; another is a servant for a share (of the gain)...A servant engaged for a day, a month, half a month, six months, two months, or a year,

must do the work which he promised to do and receive the stipulated fee. The warrior is the highest of these ; the cultivator of the soil is the middlemost ; the porter is declared to be the lowest, and so is (a servant) employed in a household work. A servant for a share of the grain is declared to be two-fold, either serving a husbandman or an owner of cattle ; he shall receive, no doubt, a share of the grain produced or of the milk. A third or fifth (of the produce) shall be awarded to the cultivator of the soil as his share. Let that cultivator to whom food and clothing is given take a fifth of the crop ; and let him who serves in consideration of the profit (alone) take a third part of the grain produced. ”³⁵ Thus Manu says : “ A cowherd, who has agreed to take milk in lieu of his wager, shall milch with the consent of the owner, the best one among (each group of) ten cows. ”³⁶

3. Terms of Contract :

The wage-problem thus emerges. The price or consideration for services is called वेतन or वृत्ति (wages) Wages were usually fixed by a sort of contract between the employer and his servants.

There are certain terms of contract which are binding on both sides. Neighbours shall know the nature of the agreement between a master and his servant. The servant shall get the promised wages. As to wages not previously settled the amount shall be fixed in proportion to the work done and the time spent in doing it. Wages being previously unsettled, a cultivator shall obtain 1/10 of the crops grown, a herdsman 1/10 of the butter clarified, a trader 1/10 of the trade proceeds. Wages previously settled shall be paid and received as agreed upon.³⁷ Wages may be paid either at the commencement or at the middle, or at the end of the work as agreed upon. It was incumbent upon the workers to take due care of the implements entrusted to them.³⁸ The labourer shall forfeit his wages if he fails to perform even a small part of his master's work; and if he fails to do the work altogether although he may be able to do it, he has to return the wages to his master and pay twice as much to the king as a fine. The master is free to take the service promised by a servant by force in case he is unwilling to render it.³⁹ The servant who is rendered incapable by illness or other outward calamities is to be allowed to do his

work by substitute. The loss incurred by his master or employer owing to such delay shall be made good by extra work.⁴⁰ If the servant transgresses the direction of his master regarding the time or place at which his services should be rendered and thereby causes loss to the business in which he is employed, then he is to receive as much as wages as his master thinks fit. If, however, he brings in more profits by reason of his superior knowledge, then he is to receive something in addition to his usual wages by way of reward.⁴¹ A servant is bound to continue to the end of his term otherwise he is liable to lose his wages. However if he can show that he had to leave his service owing to some fault of his master he is entitled to the wages for the work done. Or, if he is dismissed, without any fault of his own, he is entitled to full wages; and Vishnu even adds that the master may be further fined for dismissing the servant without an excuse. The master is also bound to pay the stipulated wages for the work done, otherwise he is to be compelled by the king to pay them, and a fine besides.⁴² The master is responsible for any improper act done by the servant, commissioned by him.⁴³

It is clear that the basis of the obligation here rests upon the reciprocal reliance caused by the agreement ; and if one of the parties fails to carry it, it must pay the necessary compensation to the aggrieved party. Yet the moral aspect of the transaction is not lost sight of ; and a distinction is recognised between injuries done deliberately and those due to circumstances over which the party has no control. Another point to be noticed is that where there is an entire contract, it must be performed in its entirety. No party can get away from it except through some fault of the other party. On the whole, therefore we find that the interests of the capitalist as well as the labourer are fairly safeguarded by the State.

In the Pali literature we find that every big merchant and landowner had in his service a number of hired people. They were duly taken care of by the masters; though they used to go to their own houses in the evening. Once upon a time there was a rich merchant in Benares, Suciparivara, whose wealth reached eighty crores, and who took delight in charity and other good works. His wife and children and all his household and servants down to the calf-herds kept six holidays every month.

At that time the Bodhisatta was born in a certain poor family, and lived a hard life on a workman's wages. Hoping to get work he went to this merchant's house. When other workmen came to him, the merchant used to say to them: "In this house, the workmen keep the moral precepts, if you can keep them, you may work for me." But to the Bodhisatta he made no hint in the way of mentioning moral precepts but said: "Very well, my good man, you can work for me and arrange about your wages." Thenceforth the Bodhisatta did all the merchant's work meekly and heartily; without a thought of his own weariness: he went early to work and came back at evening. One day they proclaimed a festival in the city. The merchant said to a female servant, "This is a holy day, you must cook some rice for the workpeople in the morning: they will eat it early and fast the rest of the day." The Bodhisatta rose early and went to his work; no one had told him to fast that day. The other workpeople ate in the morning and then fasted, the merchant with his wife, children and attendants kept the fast; all went each to his own abode, and sat there meditating on the moral precepts. The Bodhisatta worked all day and came home at sunset. The cookmaid gave him water for his hands, and

offered him a dish of rice taken from the boiler. But the Bodhisatta, on knowing that there was a fast, abstained from eating any thing and sat there meditating on the moral precepts. ⁴⁴

4. Wage-theory:

The essential question here is what was the wage theory which tacitly governed the practice of the age? The wages were fixed by experts or the State. "Artisans, musicians, physicians, buffoons, and other workmen, serving of their own accord, shall obtain as much wages as similar persons employed elsewhere usually get or as much as experts shall fix." ⁴⁵ They were usually settled by a contract between the employer and the employed on the basis of custom. But what was the standard of wages? A certain rate was fixed by the State below which it would not be safe to go. Ill-paid and discontented labour gives rise to revolutions. "Those servants who get low wages are enemies by nature. They are auxiliary to others and seekers of opportunities and plunderers of treasure and people." ⁴⁶ Hence arises the question of fixing a minimum wage in view of maintaining a certain degree of social happiness and contentment. "One should neither stop nor postpone payment of salaries. Moderate remuneration is said

to be that which supplies the indispensable food. Good wage is that by which food and clothing are adequately supplied. Low wage is that by which only one is maintained."⁴⁷ Wages therefore should be so fixed as to enable the worker to supply food, clothing and necessities to his family and dependents.⁴⁸ Now what is the normal family of a man according to Shukra? The chaste wife, stepmother, daughter, father, wife, widowed daughter, or sister who has no offspring, aunt, brother's wife, sister of father or mother, grandfather, preceptor who has no son, father-in-law, uncles, grandson who is young and orphan, brother, sister's son, these must be maintained carefully to the best of one's ability, even in adverse circumstances. In times of prosperity, however, one should maintain the families of both parents, friends, wife's family, and the attendants, servants, and maid servants, also the deformed, the strange, the poor, and the helpless.⁴⁹

Such is Shukra's standard of normal wages. However, wages were to vary according to the nature and efficiency of the services and time spent in it. The standard of life and comfort was to regulate the lower limit of wages. But their upper limit can only be fixed by the nature of the social contribu-

tion of the worker. "According to the qualifications of the workers there should be the rate of wages fixed by the king carefully for his own welfare." ⁵⁰ Remuneration can be paid according to time, or work, or both. "The weight is to be carried by you thither, and I shall give you so much for your work." Remuneration calculated on this system is according to work. "Every year, month, or day, I shall pay you so much." Remuneration calculated on this idea is according to time. "So much work has been done by you in so much time; I pay you therefore so much" Remuneration thus calculated is according to both time and work. ⁵¹

5. Domestic Service:

Certain rules are given regulating the treatment of domestic servants. These also reveal the position of labour in those days. There were three types of servants; inactive, ordinary, and quick; their wages have to be low, ordinary, and high respectively. Personally the king or the master must be full of kindness to his servants; the satisfaction of the servants is the best asset of the master. "The master by harsh words, low wages, severe punishments, and insult brings out in the servant the attributes of the enemy. Those who

are satisfied honoured by distinctions and pacified by soft words, never desert their master. The worst servants desire wealth, the medium want both wealth and fame, the best want fame. Reputation is the wealth of the great. The king should satisfy both his servants and subjects according to their qualifications, some by spreading out branches, others by giving fruits. He should gratify the others by gentle looks and smiles, soft words, good feasts and clothes, and betels, and wealth ; some by inquiries about health, etc.....and the grant of privileges, bearers, ornaments and uniforms, umbrellas, chamar etc. ; some by mercy, obeisance, respect, attendance, services, knowledge, love, affection, association, offer of one-half of one's seat, or the full seat, praise or recital of the deeds done for the good of others. " 52

But this was not all. Mere lip - affection may go far ; but it has to be expressed in concrete deeds. Special rules are therefore given with regard to the grant of holidays to the workers, the grant of some proportion of their pay to them even during their period of illness, the grant of old age pensions, and the maintenance of a

provident fund. All these rules show the generous spirit with which the labour problem was tackled. Many of the details of the most advanced labour legislation of recent times are anticipated by Shukra in those days. Every servant is to have leisure of three yamas at night, and a yama by day. All days of general festivals were usually treated as holidays. There were rules of service; leave without pay, leave with full pay and such other devices were employed in case of illness. There was a general right to a leave of a fortnight every year. A servant who was ill for half a fortnight was entitled to full pay. A highly qualified servant was to receive half the wages in case of a long illness. A diseased servant was to get usually a quarter less than the annual remuneration; and if he had served for five years he was to get three months' wages; and a servant who had long illness would get a maximum of six months' leave with full pay. The rules of pension were also liberal. The man who had put in forty years' service would get half the wages without work for life. In case of his death with a minor son, the same pension is to be enjoyed by his minor son, or his wife and well-behaved daughters. A minor son would get

the full salary of his father, during his minority, if his father dies in king's service. One - sixth or one - fourth of the wages are to be deposited with the master who is to return half of that amount or the whole during two or three years. As a reward for services, a servant would get one - eighth of the salary every year ; and for exceptional services something more. ⁵³

6. Indentured Labour : Vishti :

There are two other institutions which must be studied in detail in order to get an accurate idea of the economic organisation of ancient India - the institution of slavery and the institution of forced labour. The latter was a well-known factor in the industrial system of early Indian History and rendered possible the construction of giant works in those days of mere bodily labour. Thus we are told that: "The king shall cause each artisan, manufacturer, shudra, and labourer to work for him for a day, each month." ⁵⁴ This institution was known in ancient India as विष्टि and even now is known as वेठ. More important than this royal imposition was the mandate of the village community. It had to create and maintain its public works such as

wells, tanks, channels, roads, and public buildings. Above all the community had to see that the irrigation works - the tanks and the channels were duly maintained, not only because all agriculture was dependent upon them for water supply, but also that the water was properly distributed, and all parties concerned got their due share of it. Hence arose the institution of village communal labour by which each member of the community was required to contribute his share towards the upkeep of the public works of the village.

Thus to these institutions - the compulsory labour for the government and that of the village community, India owed in the past the construction and maintenance of all these important public works. We are told that we owe to this institution for compulsory labour the great Thibet road through the Himalaya mountains, the great temple of Tanjore in South India, among other things. An instance of what used to happen often is supplied by Tipu Sultan carrying off 20,000 labourers from the neighbouring area and forcibly keeping them in his employ for years, for building his fortifications in Seringapattam.

"Those who, with their united efforts construct on road buildings of any kind beneficial to the whole country, and who not only adorn their villages, but also keep watch on them shall be shown favourable concessions by the king." ⁵⁵

7. Slavery:

A factor of equal importance was the institution of slavery. In all countries the hardest work often falls to the lot of the least paid men. Society gets its drudgery done by this class and in return treats them as outcasts. These are the helots of all society by whatever name we call them. They are hewers of wood and drawers of water for men of upper rank. Such were the Dasas and the Shudras of ancient Aryan society. It is impossible to ignore the Shudras altogether, for a large part of the hard manual work was done by them. The only question is how far these Shudras were slaves, and how far they were capable of enjoying the privilege of human beings. It is pleasant to learn in this connection the opinion of Megasthenes: "The law ordains that no one among them shall under any circumstances be a slave, but that, enjoying freedom, they shall respect the equal right to it which all possess, for

those, *they thought*, who have learned neither to domineer over nor to cringe to others will attain life best adapted for all vicissitudes of lot." ⁵⁶ "All the Indians are free, and not one of them is a slave. The Lakedaemonians and the Indians were here so far in agreement. The Lakedaemonians hold the helots as slaves, and the helots do servile labour; but the Indians do not even use aliens as slaves, much less a countryman of their own." ⁵⁷

The Dasas or slaves used to be given as presents in the Vedic period. "Yadu and Turva too, have given two Dasas, well-disposed, together with a great store of kine." ⁵⁸ "Slavelike may I do service to the Bounteous." ⁵⁹ Manus mentions seven kinds of slaves: a captive of war, a slave for maintenance, a son of a female slave, one purchased for money, a slave obtained as a present, a hereditary one, and one condemned to slavery for any offence.⁶⁰ Narada has a list of fifteen kinds of slaves: one born at his master's house; one purchased; one received (by gift), one obtained by inheritance; one maintained during a general famine; one pledged by his rightful owner, one released from a heavy debt, one who has come forward declaring

“ I am thine ”, an apostate from asceticism, one enslaved for a stipulated period ; one who has become a slave in order to get maintenance, one enslaved on account of his connection with a female slave, and one self-sold. ⁶¹ In the Buddhist period also there were slaves. Some owed their slavery to capture some to judicial punishment, some to voluntary self-degradation, and others to debt. ⁶² Thus a village superintendent who has spoken ill of the inhabitants of the village before the king, is condemned to lose both his property and his freedom, and he is made the slave of the village inhabitants. A female slave is bought for 700 kahapanas. “ The selling or mortgaging by kinsmen of the life of a Shudra who is not a born slave, and has not attained majority, but is an Arya in birth, shall be punished with a fine of 12 panas; of a Vaishya, 24 panas; of a Kshatriya, 36 panas; and of a Brahman, 48 panas. If persons other than the kinsmen do the same they shall be liable to three amercements and abettors shall likewise be punished. It is no crime for Mlechhas to sell or mortgage the life of their own offspring. But never shall an Arya be subjected to slavery. But if in order to tide over family troubles, to find money for fines or court decrees, to recover the (confiscated) household implements, the life of an

Arya is mortgaged, they (his kinsmen) shall as soon as possible redeem him (from bondage); and more so if he is a youth, or an adult capable of giving help. Any person who had once voluntarily enslaved himself if guilty of an offence shall be a slave for life. Similarly any person whose life has been twice enslaved by others shall, if guilty of an offence, be a slave for life. Both of these two sorts of men shall, if they are once found desirous to run away to foreign countries be slaves for life. "63 Here we find one severe limitation with regard to slavery: it should not be extended to Aryans as far as possible. In a passage of the Mahabharata, this practice of slavery is condemned. "Men are seen to own men as slaves, and by beating, by binding, and by otherwise subjecting them to restraint, cause them to labour day and night...In every creature that is endued with five senses, live all the deities, the sun, the moon, the god of wind, Brahman, Prana, Kratu, and Yama. "64

Yet slavery was not an immutable condition for those who once happened to be slaves. The four types of slaves viz. those born at the master's house, those purchased, those received as gift, and those obtained by inheritance were hereditary. Yet

the master could release them, if pleased with them. However, if any one of them saved his master's life, he was entitled not only to claim freedom, but also a son's share of his master's wealth. The men sold in slavery during the famines, could release themselves either by giving a particular amount of work, or a pair of oxen, to their master. One pledged is released when his master redeems him by discharging the debt. A debtor is released from slavery by paying his debt with interest. One enslaved for a stipulated period recovers freedom on the expiration of that period. One who has come forward declaring ' I am thine ', one made a prisoner in war, and one won through a wager, these are released on giving a substitute whose capacity of work is equal to theirs. An apostate from asceticism, would become the king's slave; he can never be emancipated. One who has become a slave, in order to get a maintenance, is released at once on giving up the said subsistence. One enslaved on account of being connected with a female slave, is released on parting with her. That wretch who being independent sells himself, is the vilest of the slaves; he cannot be released from bondage. Those who are sold after having been captured by robbers, and those who are enslaved by forcible means, must be emancipated by the king. Their slavery is not legal.⁶⁵

The slaves were not entitled to have any property of their own. "Three persons are declared to have no proprietary right, a wife, a slave, and a son. Whatever property they acquire shall be made over to him to whom they belong."⁶⁶ The Arthashastra says that the property of a slave is to pass into the hands of his kinsmen, in whose absence alone, the master was entitled to it. "A slave was entitled to enjoy not only whatever he has earned without prejudice to his master's work, but also to the inheritance he has received from his father."⁶⁷ The offspring of a man who has sold himself as a slave is to be an Arya.

Narada distinguishes between two types of work. "Know that there are two sorts of occupation: pure work and impure work. Impure work is that done by slaves. Pure work is that done by labourers. Sweeping the gateway, the privy, the road, and the place of rubbish, shampooing the secret parts of the body, gathering and putting away the leavings of food, ordure and urine, and lastly rubbing the master's limb when desired, this should be regarded as impure work; all besides this is pure."⁶⁸ However the actual work and position of slaves were not al-

ways of the worst type. Thus Arthashastra has certain humane rules for slaves. "Employing a slave to carry a dead body or to sweep ordure, urine, or the leavings of food, keeping a slave naked, or hurting or abusing him ; or violating (the chastity of) a female slave shall cause the forfeiture of the value paid for him or her." ⁶⁹ A slave who is less than eight years old and has no relatives was not to be employed in mean vocations against his will or sold or mortgaged in a foreign land. In the Pali literature we find that the status of slaves born in a house was higher than that of hired labourers. Thus we read such compounds as children - wives-slaves - workpeople. Dr. Fick thus sums up the evidence: There are instances of kind treatment of slaves in the Jatakas (III. 162. II. 422). But there are instances of thrashing, imprisonment, and bad food as well. One slave is allowed to do the duty of a store-keeper. ' Not always ' he reflects within himself, ' will one care to let me have the office of a full-store-keeper; one good day some defect will be noticed in me and then people will thrash me, lock me up, brand me and give me the food of a slave to eat.' The work which the slaves had to do was naturally extremely manifold and diffe-

red with the social position of the master and the intelligence of the slave. Many might be employed, like the slave *Katahaka*, in higher employments; as a rule, however the work of the slaves was of a lower nature. Often he washes the feet of his master (III. 101). The slaves are expected to serve at the tables of their masters, set before them the dishes, place the spittoons in their position, take particular care of the drink, and stand behind them with a brush. (I. 453)...As they lived together with the families to which they belonged, they lacked the local isolation and external combination of the despised castes; they were in consequence of this, as little a ' caste ' as the slaves of the Greeks and the Romans. ⁷⁰ This peculiarity of the slaves here in India viz. that they were domestic servants happily differentiates them from slaves in ancient Greece or Rome or plantations as in the west. The wage-earner was more free: but his life was often harder than that of the slaves.

III

1. Ancient India not merely agricultural: Decline of arts:

We have thus seen the conditions which

led to India's success in the world of arts and industries in the past. It must be now amply clear even to the most prejudiced observer that India was never a purely agricultural country. It had its day both in the development of positive sciences and of arts and industries. "Much of the prevalent notions regarding the alleged inferiority of the Hindu genius in grappling with the problems of this mundane sphere [and the extra proneness of the Indian mind to metaphysical and impracticable speculations, can vanish and be proved to be the results of the malobservations and non-observations leading to 'half truths which are really whole errors' - only if we apply the historic comparative method in studying Indian facts and phenomena. For all indologists should remember that the wonderful achievements of the western nations are strictly speaking only a century old, so that if, while instituting a comparison between Hindu and occidental cultures on the score of physical sciences so called, and applied arts and industries, care were taken to eliminate from one's consideration the triumphs and discoveries of the last few generations, the Hindu scientific intellect would be found to have been in no way lagging behind." ⁷¹ Sir Thomas Munro pays a glow-

ing tribute to Indian culture: " I do not understand what is meant by the civilization of the Hindus; in the higher branches of science, in the knowledge of theory and practice of good government and in education which by vanishing prejudice and superstition, opens the mind to receive instruction of every kind from every quarter, they are much inferior to Europeans. But if a good system of agriculture, unrivalled manufacturing skill, a capacity to produce whatever can contribute to convenience and luxury; schools established in every village for teaching arithmetic; the general practice of hospitality and charity amongst each other; and above all, a treatment of the female sex full of confidence, respect, and delicacy are among the signs which denote a civilized people, then the Hindus are not inferior to the nations of Europe and if civilization is to become an article of trade between the two countries, I am convinced that this country (England) will gain by the import cargo. " 72

A time there was when all the professions were equally open to all men in India. As Emerson says: " Has he (man) not a calling in his character ? Each man has his own vocation. The talent is the call. " The Rishis did not form an exclusive

caste; but each one followed, according to his tastes, inclinations, and capacities the particular profession he chose. This freedom of opportunities is a fundamental condition of true economic greatness. Another type of freedom which was equally fundamental to the growth of physical sciences was freedom from the dogmas of religion or metaphysics which the Vedic people enjoyed. The scientific spirit was in full vigour in India in the time of Shushruta who laid much stress on knowledge gained from observation and experiment. (Sharira Ch. V.)

2. Fall: Rigidity of the Caste. Degradation of Labour:

All this was changed. The caste system assumed a more rigid form. Priestly class arrogated to itself a dominance to which it had no claims. It was impossible for a Brahmin according to Manu to touch a corpse without bringing pollution to his sacred person.⁷³ The result was that anatomy and surgery which depended for their data on the dissection of dead bodies, fell into disuse, and became lost sciences to the Hindus. It was also considered highly derogatory for a member of a higher caste " to sweat away at the forge like a cyclops ". The

arts were thus relegated to the despised castes. " It is with pain that the historian of the Hindus finds in this passage all mechanical arts, ⁷⁴ trades, and industries classed with prostitution and crime. For the list includes misers, men in fetters, thieves, eunuchs, *actors, workers in leather*, men who are cursed, Vardhusis, prostitutes, men who initiate others indiscriminately, *physicians*, diseased men, ill-tempered men, faithless women, drunkards, envious men, cruel and violent men, outcasts, *vratyas*, conceited men, impure-eaters, unprotected women, *goldsmiths*, henpecked husbands, indiscriminate priests, *sellers of arms, blacksmiths, weavers*, eaters of dogs, cruel men, king's officers, *dyers*, ungrateful men, men who kill animals, *washermen, liquor-vendors*, backbiters, liars, *oil-manufacturers*, flatterers, and vendors of the Soma wine. How many honest trades do we find in this list of despised professions ? " ⁷⁵

On the following crafts and professions rested a social stigma; kushilava (bards), actors, jugglers, dancers, singers and the like ; musicians, fencers with stick or wrestlers ; jesters, stage - players, teachers of dancing, singers and the like; gamesters, low artists, butchers, meat - sellers, bird - catchers, hunters, trappers, fishermen, trainers of animals, snake - catchers, leather -

manufacturers, cobblers, makers of bows and arrows, dealers in weapons, blacksmiths, goldsmiths, carpenters, weavers, dyers, idol-manufacturers, ploughmen, artisans, mechanics, architects, superintendents of works in mines or factories, those who execute great mechanical works or make large instruments, washermen, quacks, tailors, shopkeepers, publicans, messengers, basket-makers, workers in cane, the police officers, the mace-bearers.⁷⁶ Mr. Dutt remarks: "This is a pretty comprehensive list. If we exclude physicians, shop-keepers, singers, actors, trainers of animals, bird-fanciers, instructors in arms, architects, oil-manufacturers, carpenters, washermen, hunters, goldsmiths, blacksmiths, manufacturers of baskets and arms, *all* artisans, *all* shepherds, *all* agriculturists, who then are left in the nation to receive honours? *Priests* and *kings*." "The results were simply disastrous so far as arts were concerned. Genius was impossible except among priests and kings. Men held in a perpetual moral bondage and servitude never learnt to aspire after greatness and glory. Men to whom honour was impossible never learnt to deserve honour and distinction. In other countries a Cincinnatus might leave his plough and wield the destinies of his na-

tion, or a Robert Burns might give expression to a Nation's sentiments in thoughts that breathe and words that burn ; but in India, the cultivator's fate was sealed ; he could never break through the adamant walls of social rules. Among other people a sculptor, a painter, or an architect, like Phidias, or Praxiteles, like Raphael or Michel Angelo, might by the force of his genius win the highest honour in his country. But in India, that highest honour was the exclusive privilege of the Brahmin and the Kshatriya ; honour to an architect or to a sculptor was simply out of the question. Under healthier influences the noblest artisan or engineer might rise to be a Watt or a Stephenson, but in India the artisan and the engineer were chained by shackles of steel which it was impossible for them to break. Held in comparative degradation and contempt, the artisan and the mechanic never learnt to soar beyond the fixed rules of their art and gave no indications of a great idea, a bold conception, a new invention, or an original genius. Hindu architects covered India from Orissa and Alora to Tanjore and Rameshwaram with temples and edifices. The patience, the industry, the attention to minute details, the ingenuity, the

skill displayed in these works will bear comparison with those of any nation, ancient or modern, on the face of the earth. But the conception of a great architect, the genius of a true artist is often wanting in these magnificent edifices. A Brahmin poet in Ujjayani has conceived a Shakuntala in verse, but there is no Shakuntala in stone among the millions of sculptured figures of India. ”

“ By her position and her civilisation India should have been the mistress of the Indian ocean, as Greece and Rome were of the Mediterranean; and a Hindu mercantile navy should have swept the seas from China to Egypt. But the genius of Brahmins and Kshatriyas did not descend to the art of navigation; civilised India depended on the rude artisans for commerce with the West, and the imperfect maritime communications which Hindus had with Sumatra, Java, and China in the Buddhist period, – as we know, from Fa Hian’s pages were soon forgotten, and it was considered a sin to cross the seas. Hindu genius struggled against the dishonour cast on arts. Hindu architects and sculptors, and goldsmiths and weavers attained all that it was possible to attain by skill and industry and ingenuity and by long training; but the genius which marks

the literature and thought of ancient India is absent in her industrial arts, her mechanical inventions, and her maritime enterprise. " 77

3. Decay of scientific spirit. One-sided monism :

In the same way, decay of genius was visible almost for the same causes in the field of positive science. Constant contact with fact is the secret for success in science, yet matter being of the earth, earthy, it was below the dignity of the Brahmin Pandit to descend from his philosophic heights to study the operations of Nature in very small things. Men began to soar into air, thin air, of metaphysical abstraction; and became completely oblivious of the things that lay about their feet. It is true that the "the Hindu has no doubt always placed the transcendental in the foreground of his life's scheme but the positive background he has never forgotten or ignored. Rather it is in and through the positive, and the secular, and the material that the transcendental, the spiritual, and the metaphysical have been allowed to display themselves in Indian culture and history. The *Upanishadas*, the *Vedanta*, and the *Gita* were not the works of imbeciles and weaklings brought up in an asylum of

incapables and a hospital of incurables."⁷⁸ Such was no doubt the spirit of philosophy in ancient India. Yet latterly the extreme Advaitists developed a tendency to ignore matter in its search after the spirit. The neglect and even the extinction of the finite became the necessary condition for the realisation of the Infinite. The highest synthesis, the essential indivisibility of matter and spirit, object and subject being thus forgotten, men began to fly from the world and its call to listen more carefully the whisperings of the soul. This was bound to have a disastrous effect on the development of positive science as well as applied arts and industries. The fundamental evil of economic situation in India is a divorce between the intellect and the hand; the result was doubly disastrous. Philosophy lost contact with life and its difficulties, became often airy and hair-splitting; and arts being deprived of the inspiration of genius became mere manifestations of traditional lore and manual skill. "The intellectual portion of the community being thus withdrawn from active participation in the arts, the *how* and *why* of the phenomena—the coordination of cause and effect—were lost sight of—the spirit of inquiries, gradually died out among a nation naturally prone to speculation and metaphysical subtleties, and India for

once bade adieu to experimental and inductive sciences. Her soil was rendered morally unfit for the birth of a Boyle, a Descartes, or a Newton, and her name was all but expunged from the map of the scientific world. "79

V. Castes, Classes, and Professions.

I.

1. Professions in the Vedic Period.

Herdsmen. Early Vedic Society was sufficiently developed to admit a variety of professions in it. For every art and industry that was cultivated, there was a distinct profession. One of the earliest professions was that of cattle-rearing: for the early society was essentially pastoral. It was the duty of the cowherds (gopa) to take out cows to pasture daily. "Let them return to us again: under this herdsman let them feed. I call upon their herdsman, him who knoweth well their coming nigh, their parting and their home-return, and watcheth their approach and rest. Yea, let the herdsman, too, return, who marketh well their driving-forth; marketh their wandering away, their turning back and coming home."¹ "Like as the household herdsman, guards the cattle."² Agni looks on all creatures "like a brisk herdsman moving round his cattle."³ "Even as the herdsman driveth home his cattle, I urge my songs to him."⁴ The herdsman used to employ sticks and staves, or goads furnished with a steel-pin to drive the cattle.⁵

2. *Agriculture*. was also a universal profession practised by all classes. A gambler is asked to devote himself to agriculture. "Play not with dice : no, cultivate thy cornland. Enjoy the gain, and deem that wealth sufficient."⁶ In one hymn, blessings are invoked on the cultivators (kinasha), field operations etc. "Happily let the shares turn up the ploughland, happily go the ploughers with the oxen."⁷ It was expected that agriculture might yield not only wealth enough to support the family, but something more. "Let the plough, lance-pointed, well-lying, with well-smoothed handle, turn up cow, sheep, an ongoing chariot, and a plump wench."⁸

3. *Hunting* did not exist as the main source of livelihood in the Rigveda, yet it did not altogether disappear then. Hunting was resorted to for recreation, for protection of flock from wild beasts, and also for food. The hunter was a regular member of the Vedic Society: he was called वृत्रह. He used to employ the arrow occasionally: "let not the arrow-bearing archer reach thee."⁹ "So, Varuna, I fled afar through terror as flies the wild bull from an archer's bowstring."¹⁰ He hunted wild elephants,¹¹ "the wild boars having tusks of iron,"¹² the wild bulls, the thought-fleet deer,¹³ birds, and lions. The nets and pitfalls were the usual means for catching

animals as well as birds. Birds were usually caught in nets (pasha).¹⁴ The fowler or bird-catcher was called the master of snares (nidha-pati).¹⁵ The net was fastened on pegs.¹⁶ The lion was captured in pitfalls. "As a snared lion leaves the trap that caught him."¹⁷ "Round him they stand as round an angry lion." Wild bulls and elephants were captured in these pits: hence they were called Rishya-da "antelope-catching".

4. *Weaving* was a profession both for men and women. "Having attained to Vak in sinful fashion spin out their thread in ignorance like spinsters." Night and morning "like female weavers interweave in concert the long-extended thread, the web of worship" ²⁰ "One who is Lord of Sucha, Lord of Sucha caring for herself, weaving the raiment of the sheep and making raiment beautiful."²¹ The bride herself used to weave with beautiful border the garment the bridegroom had to put on on the marriage day.²² A female weaver was called Vayitri²³ at one place and Siri at another place.²⁴

5. An equally familiar figure was that of the *carpenter* (takshan). "He, like a carpenter whose back is aching crouched and slunk away."²⁵ "As a weight bends a chariot-seat, so round my

heart I bend the hymn." ²⁶ Many of these carpenters were skilled craftsmen. "As a skilled craftsman makes a car, a singer I, Mighty one, this hymn for thee have fashioned." ²⁷ "Like fair and well-made robes, I seeking riches, as a deft craftsman makes a car, have wrought them (i. e. prayers)." ²⁸ "Doers of marvels, skilful workers Ye restored Vandana, like a car, worn out with length of days." ²⁹ "Kapi hath marred the beauteous things, all deftly wrought, that were my joy." ³⁰ Thus the carpenter used to do all types of wood-work, including carved work of the most refined type. The axe (kulisha or parashu) was one of his tools.

6. Another figure we meet with often is that of the *smith* (Karmara). He used to manufacture various metallic things. "And we, the singers, have received the cauldron of metal which was heated for Pravargya." ³¹ His main business was that of smelting the ore in the fire. "These Brahmanaspati produced with blast and smelting, like a smith." ³² A smith was often called Dhmatrī ('blower'), a smelter. "God, doing holy acts, devout, resplendent, smelting like ore the human generations." ³³ The smelter's furnace is referred to. "Whose flames,

when thou art sending forth the smoke, completely reach the mark, when Trita in the height of heaven, like as a smelter fanneth thee, even as a smelter sharpeneth thee."³⁴ The smelter used the wings of birds to fan the flame. "The smith, with ripe and seasoned plants, with feathers of the birds of air, stones and with kindled flames, seeks him who hath a store of gold." ³⁵ He used to work in various metals: hiranya (gold), ayas (bronze), shyama-ayas (iron), loha-ayas (copper), sish (lead), trapu (tin), Karshnayas (steel).³⁶

7. The profession of *medicine* was widely practised and that by the highest castes. The physician was called bhishaj. The Ashwins, Varuna and Rudra were called physicians. "Do thou with strengthening balms incite our heroes: I hear thee famed as best of all physicians."³⁷ "For ye are most motherly physicians, parents of all that standeth, all that moveth."³⁸ The physician expects concrete rewards for his services. "Steed, cow, and garment may I win, (as my fee for curing you), win back thy very self, o man."³⁹ In the following lines, the healing powers of herbs are vividly described. "The Holy Fig Tree is your home, your mansion is the Parna Tree; winners of cattle shall ye be if

ye regain for me this man. He who hath store of herbs at hand, like kings amid a crowd of men ; physician is that sage's name, fiend-slayer, chaser of disease. Herbs rich in Soma, rich in steeds, in strengthening power ; all these have I provided here, that this man may be whole again...The healing virtues of the plant stream forth like cattle from the stall,—plants that shall win me store of wealth, and save thy vital breath, O man. With Soma as their Sovran Lord, the plants hold colloquy and say : O King, we save from death the man whose cure a Brahman undertakes. "10 The physicians applied balms to wounds : " the leech seeks the maimed. "11 They had developed a sort of surgical skill, no doubt. " When in the time of night, in Khela's battle, a leg was severed like a wild bird's pinion, straight ye gave Vishpala (a mare) a leg of iron that she might move what time the conflict opened. His father robbed Rijrashva of his eyesight...Ye gave him eyes, Nasatyas, wonder workers, physicians, that he saw with sight uninjured. "12 " Mighty ones, with what powers ye gave Paravrij aid what time ye made the blind and lame to see and walk. "13 " He without ligature, before making incision in the neck, closed up the wound again ; most wealthy Maghavan, who maketh whole the injured part. "14

The Atharvaveda mentions numerous diseases such as venereals (Jayanya), heart-disease, (hriddiyota), debility (sedi), elephantiasis (shipada), rheumatism (vishkandha), cough, abscess (vidhrada), jaundice (harita), white leprosy (Kilasa) etc. Spells were combined with medicines to cure diseases.⁴⁵ The Atharvan hymns themselves are said to be medicines.⁴⁶ Water-remedies (jalasha) were also employed. The knowledge of anatomy (sharira) shown is considerable ; that may be due to the practice of dissecting animals at the sacrifice. We are told that an Asuri first discovered a black plant which was used as a remedy for leprosy ;⁴⁷ and that the Kirata girls used to sell the drugs dug by them upon the mountains, in exchange for clothes, straw-mattresses and skins.⁴⁸ The earth of white ant (upajika) was a favourite remedy for various ills.⁴⁹ Sometimes the treatment was based on clour merely ; red objects were placed round a patient suffering from jaundice and Rohini, the red goddess was worshipped.⁵⁰ The touch cure was also resorted to.⁵¹ Aphrodisiac drugs were in great demand.⁵²

8. Various other professions are mentioned in the Rigveda. There were *charioteers*, who were often very skillful *drivers*. The rapid sunbeams are called charioteers of Indra, " best skilled to

draw the rein."⁵³ "As he who drives the car holds fast the rein."⁵⁴ Often these drivers used to whip the horses or urge them on with their heels to the great annoyance of the poor horses.⁵⁵ "Like a car-driver whipping on his horses."⁵⁶ "Leeches are ye with medicines to heal us, and charioteers are ye with skill in driving."⁵⁷ "Indra made room for his car-driver Kutsa who sat beside him."⁵⁸ The Yantri or Sarathi was therefore often held in high esteem by the fighters.

9. There was the profession of *wood-cutter* (dru-han) whose business it was to supply fuel for people and the raw material to the carpenter. Often the carpenter himself was the wood-cutter. "He looked upon the Ashwins as an axe-armed man upon a tree."⁵⁹ "The deities approached, they carried axes; splitting the wood, they came with their attendants."⁶⁰ "As trunks of trees, what time the axe hath felled them, low on the earth, so lies the prostrate dragon."⁶¹ "They crash down the trees, as when a craftsman fells, crashest them down as with an axe."⁶² The *path-maker* (pathi-krit) is referred to, showing clearly the importance attached to the finding of roads in early times. "Thou art our keeper, preparer of our paths."⁶³ There was the

barber (vaptri) to shave and polish men's faces. " As when a barber shaves a beard, thou (Agni) shavest earth when the wind blows on the flame and fans it. ' ⁶⁴ " Savitar here hath come with razor : come O Vayu, with hot water; let the Adityas, the Rudras, the Vasus wet (him) in accordance, do ye, forethoughtful, shave (the head) of King Soma. ' ⁶⁵ There was the *worker in leather* (charman)." Surya, who rolled up darkness like a piece of leather. " ⁶⁶ *Rope-making* was also a profession, for ropes are referred to. " May the fleet courser's halter and his heel-ropes, the headstall and the girths and cords about him. " ⁶⁷ *Music* may have been a profession. " Now loudly let the viol sound, the lute send out its voice with might, shrill be the music of the string. " ⁶⁸ There is mention of male and female dancers (nritu) in the Rigveda. ⁶⁹ Other professions were those of the vintner, ⁷⁰ the usurer, ⁷¹ the tamer of elephants, ⁷² the soothsayer, the weather-prophet, ⁷³ the fisherman (punjishtha), ⁷⁴ the potter (kulala), ⁷⁵ the digger of roots (muli), ⁷⁶ the washerman (malaga), ⁷⁷ the chariot-maker (the rathakara), ⁷⁸ the scavenger, ⁷⁹ and the poet who often lived at the courts of princes amid his retainers (Karu), ⁸⁰ and the trader.

8. The most important list of professions etc. is to be found however in the White Yajur Veda. This deserves to be quoted in full.

1. A Brahman.
2. A Prince.
3. A Vaishya.
4. A Shudra.
5. A Thief.
6. A Murderer.
7. An Eunuch.
8. An Ayogava.
9. A Whore.
10. A Magadha.
11. A Suta.
12. An Actor. (Shailusha)
13. An Attendant-on-the-Synagogue.
14. A Frightful person.
15. An Orator.
16. An Artificer.
17. A Lover of women.
18. A son of an unmarried girl.
19. A Chariot-maker.
20. A Carpenter.
21. A Potter.
22. A Blacksmith.

23. A Jeweller.
24. A Sower.
25. A Maker of Arrows.
26. A Maker of Bows.
27. A Maker of Bow-strings.
28. A Ropemaker.
29. A Huntsman.
30. A Dogman.
31. A Panjishtha.
32. A Descendant of a Nishada.
33. A Drunkard.
34. A Vratya.
35. A Madman.
36. An Ignoramus.
37. A Dice-player.
38. A Non-player-at-dice.
39. A Female basket-maker.
40. A Pinmaker.
41. A Paramour.
42. A Concubine.
43. An Unmarried-elder brother.
44. A Married elder brother.
45. An Actress.
46. An Amorous woman.
47. A Companion.
48. An Observer.

49. A Follower.
50. A Hunchback.
51. A Dwarf.
52. A Blue-eyed person.
53. A Blind person.
54. A Deaf person.
55. A Physician.
56. An Astronomer.
57. A Catechizer.
58. An Interrogator.
59. A Revealer of omens.
60. An Elephant-keeper.
61. A Horse-keeper.
62. A Cow-keeper.
63. A Shepherd.
64. A Goatherd.
65. A Cultivator.
66. A Dealer-in-spirits.
67. A Housekeeper.
68. A Holder of wealth.
69. A Footman.
70. A Timber-bringer.
71. A Fire-kindler.
72. An Annointer.
73. A Distributor of food to guests.
74. A Maker of Figures.

75. A Moulder.
76. A Sprinkler.
77. A Churner.
78. A Washer of clothes.
79. A Dyer of clothes.
80. A Thievish-hearted person.
81. A Backbiter.
82. A Lictor.
83. A Sub-Lictor.
84. A Follower.
85. A Climber.
86. A Sweet speaker.
87. A Horseman.
88. A Bhagadugha—a collector of the
Prince's revenue.
89. A Heater of Iron.
90. A Ferryman.
91. A Joiner.
92. A Waiter.
93. A Liberator.
94. A Man of worth.
95. A Proved man.
96. An Annointer of eyes.
97. A Maker of sheaths for swords.
98. A Barren woman.
99. A Bearer of Twins.

100. A Woman without offspring.
101. A Woman skilled in counting.
102. A Woman who has not borne a child.
103. An Unchaste woman.
104. A Woman in her courses.
105. An Old woman.
106. A White-haired woman.
107. A Skindresser.
108. A Dealer in skins.
109. A Man of the fisher class.
110. A Dasha. (Dasyu)
111. One of the Binda class. (a Hunter)
112. A Fishdealer.
113. A Deer killer.
114. A Kaivarta. (fisherman)
115. An Anda.
116. One of the Minala class,
117. A Parnaka (a vendor of leaves).
118. A Kirata.
119. A Jambhaka (Savage).
120. A Kimpurusha.
121. A Person of the Pulkasa tribe.
122. A Goldsmith.
123. A Person of the Vani class (vendor).
124. A Mourner.
125. A Leper.

126. A Watcher.
127. A Drowning man.
128. A Popular speaker.
129. An Infirm person.
130. A Foreslasher.
131. A Gambler.
132. An Inspector of faults.
133. A Trickster.
134. An Arch-trickster.
135. A Lounger in meeting.
136. An Attendant on cows.
137. A Cow-killer.
138. A Charakacharya.
139. A Follower of his own inclinations.
140. A Sufferer.
141. A Speaker.
142. A much-Speaker.
143. A Dumb person.
144. A Beater of Drums.
145. A Blower of the Tuna.
146. A Player on the Vina.
147. A Blower of the conch.
148. A Forester.
149. A Burner.
150. A Waterman.
151. A Lame person.

- 152. A Chandala.
- 153. A Pole-dancer.
- 154. A Bald-headed man.
- 155. A man with greenish eyes.
- 156. A Man of variegated colour.
- 157. A man with scales.
- 158. A Reddish eyed person.
- 159. A Dark-red-eyed person.

Here various persons are mentioned. Some of them are referred to in their moral aspects; some in respect of their natural deformities: some in respect of their personal and family peculiarities. With these we have nothing to do here. But others are mentioned from the point of view of their social and economic status. These are: the actor, the attendant-on-the-synagogue; the orator, the artist, the chariot-maker, the carpenter, the blacksmith, the jeweller, the sower, the maker of arrows, the maker of bows, the maker of bowstrings, the ropemaker, the huntsman, the dogman, the player at dice, the female basket-maker, the woman who makes pins, the companion, the follower, the observer, the physician, the astronomer, the catechist, the interrogator, the elephant-keeper, the horse-keeper, the cowherd, the shepherd, the goatherd, the cultivator, the spirit-dealer, the house-keeper, the

holder-of-wealth, the runner-after-chariot, the woodman, the fire-kindler, the annointer, the server of meals, the figure-maker, the moulder, the sprinkler, the washerman, the dyer of clothes, the lictor (door-keeper), the sub-lictor, the body-attendant, the tax collector, the ferryman, the joiner, the waiter, the applier of unguents to the eyes, the scabbaral-maker, the female knower of sequence, the skin-dresser, the dealer in skins, the fisherman, the hunter, the fishdealer, the deer-killer, the vendor or merchant, the (hired) mourner, the watchman, the public crier, the foreslasher (in battle), the gambler, the viewer of the early sun (in worship), the fabricator, the archfabricator, the attendant on cows, the cow-killer, the priest of the charakas, the speaker (of nonsense), the copious speaker, the drum-beater, the player on the lute, the blower of the bag pipes, the blower of the conch, the forester, the forest-burner, the waterman, the pole dancer. Some designations are based on a definite rank or office in the community, the Brahman, the Rajanya, the Vaishya, the Shudra, the Suta, the Vratya. Some are the names of tribes, deriving their titles from their respective countries: the Ayogava, the Magadha, the Taskara, the Naishada, the Dasha, the Kaivarta, the Baina (of Vind), the Mainal, the

Kirata, the Jambhaka, the Kimpurusha, the Paulkasa, and the Chandala. All these classifications testify to the existence of a variety of classes and professions. From it we can have some idea of the diversification of social and economic life and the progress implied therein.⁸¹

II

1. Caste Organization: the Vedic Period.

The first condition of progress in an early society lies in its capacity for organization. Primitive societies are very homogeneous: each man in life plays all the parts required of him by society. He is a priest, warrior, businessman, all in one. But as wants multiply, division of labour becomes absolutely essential. Efficiency requires specialization. Society therefore divides itself into classes. It was a splendid stroke of genius which enabled early Hindu society to organise itself on the basis of castes. Caste system is nothing but the registration of an economic fact; the need for division of labour. Caste therefore both in its inception and its further progress was the direct result of economic and social differentiation. The development of castes took place *pari passu* with the development of professions.

As professions multiplied, castes too multiplied. The early Vedic society knew of four classes : the society in the age of Manu recognised numerous castes.

The germs of this caste system are to be found in the Vedas : but the germs only. Distinction there was between class and class, profession and profession : but as yet there are few signs of formal division. There was an absolute fluidity about these professions and classes. " Rich Dawn, she sets afoot the coiled-up sleeper, one for enjoyment, one for wealth and worship; those who saw little for extended vision,...One to high sway, one to exalted glory, one to pursue his gain, and one his labour. All to regard their different vocations, all moving creatures hath the dawn awakened. " ⁸² " The Brahman was his mouth, of both his arms was the Rajanya made : his thighs became the Vaishya, from his feet the Shudra was produced. " ⁸³ In these passages we notice the first germs of the later caste system. But as yet these were recognised as classes, not castes. One Rishi prays for a son who will conquer enemies in war. ⁸⁴ Another Rishi prays for wealth and gold, horses and cows, for profuse harvests and excellent progeny. ⁸⁵ Such passages are endless. One man says : " No cow have I to call my own, no axe at hand wherewith to work. Yet what is

here I bring to thee."⁸⁵ But the most wonderful... passage is the following one. "We all have the varrious thoughts and plans, and diverse are the ways of men; the Brahmin seeks the worshipper, wright seeks the cracked, and leech the maimed... The smith with ripe and seasoned plants, with feathers of the birds of air, with stones and with enkindled flame, seeks him who hath a store of gold. A bard am I, my dad's a leech, mammy lays corn upon the stones; striving for wealth, with varied plans, we follow our desire like Kine."⁸⁷ Here the son is a bard or composer of hymns, the father is a physician, and the mother is a grinder of corn.

The Brahmins formed a profession, not a caste. They were a class of priests, officiating at sacrifices and other religious services. The Brahmin was the purohita or foreman at sacrifices: but this office was also enjoyed by Vishwamitra and others, who were members of the royal race. The Brahmins or Rishis often used to marry the daughters of the priests or composers of hymns; they used to receive as rewards wreathes of flower, or gold, asses, fleecy sheep, oxen, bamboos, logs, well-tanned skins, tuft of balbaja grass for making mats, mares, slave girls, kine, chariots

with mares, and steeds decked with pearls and horses.⁸⁸ The Brahmin had four duties : (1) Brahmanyam (purity of blood), (2) Pratirupa-charya (proper way of living), (3) Yashaha, (fame through the study of Veda etc.), (4) Lokapakti (intellectual and religious training of the people). He had four privileges : (1) Archa (veneration), (2) Dana (presents, gifts etc.), (3) Ajeyatva (freedom from oppression), and (4) Abadhyatva (freedom from capital punishment).

The Kshatriyas formed the military class, but the Rishis and the Brahmins often took part in the fight.⁸⁹ War, however, was already a profession. Wars were waged for cattle or for women, or for lands. "Two opposing hosts contend in battle for seed and offspring, waters, kine, or cornlands."⁹⁰ " May Pushan. — bestow on us our share of maids. " ⁹¹ The heroes rushed on shouting, decked with glittering ornaments, lances on their shoulders, dagger and quoit in hand, and decked with bracelets on their upper arms.

The Vaishyas formed the subject class.⁹² The term Visha was applied to the pastoral, the agricultural, and other industrial classes of the community. He is described as " tributary of

another": "to be lived upon by another," "to be oppressed at will."⁹³ The goad of the plougher was the mark of a Vaishya in life and in death.⁹⁴ The Vaishyas were primarily agriculturists; but secondarily they became trading classes, - and were called Vanij. The ambition of a Vaishya was to become a gramani or village headman.⁹⁵

The Shudra is described as "the servant of another." "to be expelled at will;" "to be slain at will." Very often he was reduced to the position of a slave by conquest.⁹⁶ His business was often "the washing of the feet."⁹⁷ Some of these were rich (Bahu - pashu - possessing many cattle); some of them were even ministers of Kings.⁹⁸ As yet the Aryans formed one compact body: and the Shudras were a recognised part of it. "Give us love for the Shudras. Give us mutual love."⁹⁹ "O just God, make me loving to the Brahmans and Kshatriyas, to the Shudras and the Vaishyas. Make me loving to all that I see."¹⁰⁰ Even sacred knowledge was accessible to them in early days. "Even as I proclaim this blessed speech (i. e. the Vedas) to all men, Brahmins, Kshatriyas, Vaishyas, Shudras, and one's servants."¹⁰¹

2. Later period.

As time went on, these classes tended to be castes. However, even in the epics and the law - books, we find that these castes were not close corporations. An amount of fluidity exists. " Yet in the stage of development portrayed in the law - books, the system has not hardened into the rigid mechanism of the present day. It is still more or less fluid ; it admits of inter-marriage under the limitations imposed by the rule of hypergamy ; it represents caste in the making, not caste as it has since been made." ¹⁰² But we find the functions of each caste very carefully defined ; and each caste was called upon to devote itself to the particular functions set apart for it. " For the preservation of all this creation, He of great effulgence, laid down separate duties for those originated from his mouth (Brahmins), from his arms (Kshatriyas), from his thighs (Vaishyas), and from his legs (Shudras). Study (of the Vedas), teaching, performance of sacrifices, officiating as priests at other men's sacrifices, gift - making, and acceptance of gifts, are the duties of Brahmins. Protection of the people, gift - making, performance of sacrifices, study of the Vedas, and abstention from

luxury are in general the duties of the Kshatriyas. Rearing of cattle, gift-making, performance of sacrifices, study (of the Vedas), merchandise, money-lending, and agriculture are the duties of Vaishyas. Only one work did the Lord ordain for Shudras, viz. to ungrudgingly serve the three above-said social orders." 103

3. Means of Livelihood.

Special means of livelihood were recommended to each caste. Not all professions are equally honourable for all people. One mode of living for the Brahmins is called **Samprakshalani** (living by washing.) Here in order to show that there is neither hoarding nor waste, one has to turn the dishes after washing them upside down. Another mode of living consists in sweeping up grain with a broom in permitted places; this is called **Samuha**. (living by sweeping). A third mode of living is called **Palani** or **Ahimsaka**. It consists in obtaining from virtuous men husked rice or seeds. The **Shilonchha** mode of living means gleaning single ears of corn in permitted places. The **Kapota** (pigeon-life) life required a Brahmin to pick up with two fingers single grains in permitted places. An old

or diseased Brahmin may take to shilonchha (gleaning cooked food) mode of life and ask virtuous men for cooked food.¹⁰⁴ Manu also elaborately discusses the professions open to a Brahmin. The ideal dominating his life is that of plain living and high thinking. It is his duty to curtail his wants to the minimum compatible with necessities of existence. In normal times a Brahmin may earn his livelihood by means which do not clash with other men's interests. He must earn money enough for his merest existence, by works, which do not disgrace the social order he belongs to, and which do not entail much physical labour or hardship. "Let him live by Ritam and Amritam, or by Mritam or Pramritam, or by Satyanritam, but never by the avocation of a dog. Picking up grains of paddy from the fields, or collecting the ears of paddy constitutes what is called Ritam. Anything obtained without soliciting is called Amritam; to live by begging is called Mritam; and to live by agriculture is called Pramritam. Trade is called Satyanritam; and it is good that a man should live by trade. Service is called the vocation of a dog. Hence it should be shunned. Either be a Kushala Dhanyaka (one who has got food-grains stored in his house,

enough for three years' consumption of his family); or Kumbhi Dhanyaka (having provisions of a year); or store up enough to support the family for three days, or only enough for the morrow. Of these four different kinds of Brahmin householders, each succeeding one is more meritorious than the one immediately preceding it, inasmuch as on account of the comparatively greater poverty of their resources they are compelled to practise self-abnegation which enables them to conquer the whole world. ¹⁰⁵ In fact, a Brahmin is not to take to any and every means of livelihood; but has to practise a profession which is " honest, artless, holy, and worthy of a Brahmin. " ¹⁰⁶

4. Brahmin and Agriculture.

Here we find that even agriculture and trade are allowed to a Brahmin in normal times. But the general sentiment was that in normal times the Brahmin should not take to agriculture and trade. This was a comparatively later sentiment. The doctrine of Ahinsa must have been partly responsible for the degradation of agriculture as a profession. " As regards the mode of subsistence called Shannivartani (that) is (as follows). He cultivates six Nivartanas (I Nivar-

tana = 4000 sq. bighas) (of) fallow (land); he gives a share to the owner (of the soil); or solicits his permission (to keep the whole produce). Let him plough before breakfast with two bulls whose noses have not been pierced, not striking (them) with the goad, (but) frequently coaxing (them). (As regards the mode of subsistence called) Kaudnali, he digs up (the soil) near a water (-course or tank) with a spade, a plough-share, or a pointed piece of wood, sows seed, (and) grows bulb, roots, fruits, pot-herbs, and vegetables. "107 Vasishtha also allows a Brahmin to practise agriculture under fixed conditions, quoting a text of Vaj. S. (XII. 71) to prove that the Brahmins were permitted to take to agriculture. " For that purpose he shall plough before breakfast with two bulls whose noses have not been pierced. (If he ploughs) in the hot season, he shall water (his beasts even in the morning)...The plough is attended by strong males i. e. is attended by strong men and bullocks, provided with a useful share-for its share is useful (because) with the share it raises i. e. pierces deep-and provided with a handle for the drinker of Soma,-for Soma reaches him,-possessing a handle for him ; that raises a cow, a sheep, goats,

horses, mules, donkeys, and camels, and a stout damsel i. e. a beautiful, useful maiden in the flower of her youth. For how could the plough raise (anything for him), if he did not sell grain? "108

Manu later on altogether forbids its practice to the Brahmins. "Failing to earn a living by following the occupation of a Vaishya, let not a Brahmin or a Kshatriya live by pursuing agriculture, which is dependent (on bullocks) and entails the destruction of many (underground) lives. Many people consider agriculture to be a commendable vocation, but in fact it is condemned by the virtuous, inasmuch as the iron-bound furrow penetrates into the earth and destroys many terrestrial lives."109

Gautama considers these professions legitimate for a Brahmin provided he works by deputies. "Agriculture and trade (are) also (lawful for a Brahmin) provided he does not do the work himself. Likewise lending money at interest."110

Baudhayana thinks that if agriculture could be reconciled with the Vedic studies, it may be permitted, not otherwise. "The (study of) the Veda impedes (the pursuit of) agriculture, (the pursuit of) agriculture impedes (the study of) the Veda. He who is able to do it, may attend to both, but he who is unable (to attend to both), shall give up agriculture."111

5. Forbidden Professions.

A long list of professions is given which are considered degrading to a Brahmin. "By pursuing handicrafts, or agriculture, by begetting children on a Shudra wife, by trafficking in cows, horses, or carts, by entering the king's service, by officiating as a priest at the sacrifice of one who ought not to be so served, by living in open hostilities to the Vedas, and by their non-study, men (Brahmins) degrade their families."¹¹² Brahmins who practise certain professions are to be held disqualified for the Shraddha ceremony. Professional physicians, those who live by worshipping divine images, meat-sellers, traders, servants of the king or village community, cattle-breeders for livelihood, professional dancers, teachers of the Vedas for money, students of the Vedas from paid teachers, teachers of the Shudra disciples, the seafaring men, the professional eulogists, the oilmen, the forgers of documents, the falsifiers of weights, the dealers in saps, the makers of bows and arrows, the trainers, of cows, horses, camels, and elephants, the professional astrologers, the tamers of beasts, the teachers of the science of war, the diverters of watercourses, the professional masons or architects, the gardeners, the messengers, the dog-players, the professional

trainers of falcons, the servants of a Shudra, the priests of all classes, the daily beggars, the agriculturists, the professional shepherds and cowherds, the carriers of corpses for money: all these are debarred from participation in the Shraddha ceremony.¹¹³ Some of these as well as a few other businesses were classed as minor sins. Living by usury, selling one's tanks, orchards, wives, and sons, teaching the Vedas for money, studying the Vedas under a preceptor who takes fees for his teaching, and selling things which ought not to be sold, working in all kinds of mines (under the king's command), raising large dams or embankments, destruction of medicinal plants, living by the earnings or the prostitution of one's wife, practising deadly incantations, and hypnotising by means of drugs, felling down unwithered trees for fuel, cooking for one's own self, cultivation of prohibited sciences, and adopting the profession of a songster or a musician: all these are minor sins.¹¹⁴ Trade is not lawful for a Brahmin. In times of distress he may trade in marketable goods, avoiding the following that are forbidden: men, condiments, liquids, colours, perfumes, food, skins, heifers, substances used for glueing (such as lac), water, young corn-stalks, substances from which spirituous

liquor may be extracted, red and black pepper, corn, flesh, arms, sesamum, and rice (except what he has grown himself). Most of these articles are not to be exchanged for one another: but food may be exchanged for food, slaves for slaves, condiments for condiments, perfumes for perfumes, and learning for learning.¹¹⁵ Certain trades or professions are peculiar to certain countries: elsewhere they are prohibited. "Now (the customs peculiar) to the North are, to deal in wool, to drink rum, to sell animals, that have teeth in the upper and in the lower jaws, to follow the trade of arms, to go to sea. He who follows (these practices) in any other country than where they prevail, commits sin."¹¹⁶

6. Status of Brahmins.

The Brahmin's status depended upon the profession he used to accept among other things. The Mahabharata also refers to the Brahmins who were consigned to a low social position owing to their practising one of the condemned professions. Among the Brahmins who waited upon Yudhishtira were those "engaged in rearing cattle and fit to be engaged in low offices," and those "possessing wealth of kine and living upon the lands that Yudhishtira had given them." "A virtuous king:

should realise tribute from and impress without pay into the public service those Brahmins that are not possessed of Vedic lore, and that have not their own fires to worship. They that are employed in courts of justice for summoning people, they that perform worship for others for a fee, they that perform the sacrifices of Vaishyas and Shudras, they that officiate in sacrifices on behalf of a whole village, they that make voyages on the ocean,—these five are regarded as Chandalas among Brahmins. They amongst them that become Ritwijas, Purohitas, counsellors, envoys, and messengers become, O king, equal to Kshatriyas. They that ride horses, or elephants, or cars, or become footsoldiers, become O king, equal to Vaishyas. If the king's treasury is not full, he may realise tribute from these. In realising tribute, the king however should except those Brahmins that are equal (in their conduct) to the gods or Brahma. The Vedas say that the king is the lord of the wealth belonging to all the orders except the Brahmins."118

7. Kshatriyas.

The Kshatriyas are now a warrior caste. Casting away life in battle, compassion for all creatures, knowledge of the affairs of the world, protection of men, rescuing them from danger, relieving the distressed

and the oppressed, these are the duties of the Kshatriyas. The Kshatriyas are responsible for the order and organization of the whole society. The economic as well as political ideal is that each class, each caste, each individual, should follow the one profession prescribed for it by birth and destiny. This is the general rule upon which the whole ancient Hindu social fabric is made to rest. स्वे स्वे कर्मण्यभिरतः संसिद्धिं लभते नरः । Let every individual as well as group do the best in the profession in which his or its lot is cast : and the result will be order, harmony, organization in society. This was what Plato meant by Justice. The Hindu theory tried to secure this reign of status by the theory of Karma. Plato had to invent the myth of the underground preparation of human souls and the golden and the iron natures which they brought with them by birth. " The forsaking of one's own occupations is considered, O Brahmin, to be a sin, and the act of sticking to one's own profession is without doubt a meritorious act. The karma of a former existence never forsakes any creature. " ¹¹⁹ The Gita says ; Death should be accepted in the practice of one's own duties : but the profession of another is full of danger. " The world subsisteth itself by professions. The (study of the) three Vedas, and agri-

culture, and trade, and government constitute, it is ordained by the wise, the professions of the twice-born ones; and each order maintaineth itself by following the profession prescribed for it. And when these callings are properly pursued, the world is maintained with ease."¹²⁰ It was the business of government to establish the four Varnas in the world according to their respective duties. No one in Ayodha, we are told, was anyayavrittiman, addicted to a calling not his own.¹²¹ "The Kshatriyas, Brahmins, and Vaishyas were loyal to their sovereign; while there were no sankaras (mixed classes) either by birth or by conduct."¹²² "All the Varnas kept by their proper work"¹²³ But force is always in one sense the basis of society. Hence the enormous importance of the Kshatriyas. The question therefore is useless, whether they were economically productive or not. They were the fundamental factors in all production, distribution, and consumption. This is amply acknowledged. "For causing all the orders to be observant of their respective duties, for the protection they afford to all...the Kshatriya duties, which include all other duties within their scope, are said to be the foremost. The other orders are able to observe their respective duties in con-

sequence of kingly duties." " Amongst men, the highest duties are those which are practised by Kshatriyas. The whole world is subject to the might of their arms. All the duties, principal and subordinate, of three other orders, are dependent (for their observance) upon the duties of the Kshatriyas...If the science of chastisement disappears, the Vedas will disappear. All those scriptures also that inculcate the duties of men become lost. Indeed, if these ancient duties belonging to the Kshatriyas be abandoned, all the duties in respect of all the modes of life, become lost. "124

8. Vaishyas.

The Vaishyas were directly the most productive class. They were the capitalists, the landowners, the merchants of the society. Primarily agriculture and cattle - rearing were their principal duties : latterly trade and lending money at interest were added to their functions. " Let the Vaishya appraise (cultivate the knowledge of) the prices and qualities of gems, pearls, metals, woven stuffs, scented things, and salts. Likewise he must possess the knowledge of sowing seeds, of the specific traits of

the soil, of the measures of land, of the rules for weighing articles; (as well as) defects or excellences of articles, the good or evil traits of countries, profits or losses in manufactured articles, and the increase of animals. He must know the wages of artisans and workmen, and languages of different races of men, he shall be able to forecast the increase or decrease in the prices, and amelioration or deterioration in the quality of an article at a particular time and place, as well as the mode of selling and buying. He shall constantly try to multiply his riches by honest means and give food to animals out of all creatures." ¹²⁵ "If he keeps (for others) six kine, he may take the milk of one cow as his remuneration; and if he keeps (for others) a hundred kine, he may take a single pair as his fee. If he trades with others' wealth, he may take a seventh part of the profits (as his share). A seventh also is his share in the profits arising from the trade in horns, but he should take a sixteenth of the trade in hoofs. If he engages in cultivation with seeds supplied by others, he may take a seventh part of the yield. This should be his annual remuneration." ¹²⁶

9. Shudras.

The Shudras were almost the helots of Hindu society. Manual work, bodily work of all types was their main vocation. The Shudras represented the labour, as the Vaishyas the capital of Hindu society. Both were equally indispensable. "In consideration of the skilfulness of their services, their capacity of work, and the number of their dependents, let him (the Brahmin) adequately fix the salaries of his Shudra (servants). He shall give him the leavings of his food, his old and cast-off clothes, and his old beddings, and grain and paddy for his bed... A Shudra, even capable of earning money must not accumulate wealth, lest in pride of his riches he might oppress a Brahmin." ¹²⁷ When the Shudra is unable to obtain his living by the service of the three other orders, then trade, rearing of cattle, and the practice of the mechanical arts are lawful for him to follow. "Appearance on the boards of a theatre, and disguising oneself in various forms, exhibition of puppets, the sale of spirits and meat, trading in iron, and leather, should never be taken up for purposes of a living by one who had never before been engaged in these professions, every one of which is regarded

as censurable in the world." ¹²⁸ The Shudra servant should be duly maintained by his master, even when he has ceased to be useful through old age, accident, or disease : and if the master falls on evil days, he should be supported in turn by his Shudra servant. ¹²⁹

III

1. Classes in Ramayana.

An interesting list of professions is met with in the Ramayana. It throws a flood of light on the economic condition of the people. The inhabitants of Ayodhya went out with Bharata in order to request Rama to return back, in the following order :—

1. Manikara-jeweller.
2. Kumbhakara-potter.
3. Yantrakarmakrit-mechanician.
4. Astropjivi-man of arms.
5. Mayurika-peacock-keeper.
6. Taittirika-partridge-keeper.
7. Chhedaka-borer. (as of pearls, wood etc).
8. Bhedaka-splitter.
9. Dantakara-ivory-worker.
10. Sudhakara-dealer in nectar.

11. Gandhopajivi-perfumer.
12. Svarnakara-goldsmith.
13. Kanakadharaka-metallic burnisher.
14. Snapaka-bather.
15. Chhadaka-dresser.
16. Vaidya-physician.
17. Shaundika-distiller.
18. Dhupika-essence-dealer.
19. Rajaka-washerman.
20. Tantravaya-weaver.
21. Rangopajivi-actor.
22. Abishtavaka-encomiast.
23. Suta-Suta.
24. Magadha-Magadha.
25. Bandi-panegyrist.
26. Varata-Varata.
27. Vaitrakara-worker in withes.
28. Gandhika-compounder of perfumes.
29. Panika-dealer in drinks.
30. Pravarika-garment-maker.
31. Sutrakara-carpenter.
32. Shilpopajivi-artisan.
33. Hiranyakara-worker in gold.
34. Vriddhupajivi-usurer.
35. Prabalika-worker-in-coral.
36. Shaukarika-pork-dealer.

37. Matsyopajivi-fish-monger.
38. Mulavapa-Planter.
39. Kansyankara-brazier.
40. Chitrakara-painter
41. Dhanyavikrayaka-grain-dealer.
42. Panyavikrayi-huckster.
43. Phalopjivi-fruit-seller.
44. Pushpopjivi-flower-seller.
45. Lepakara-plasterer.
46. Sthapatya-architect.
47. Takshana-carpenter.
48. Karayantrica-instrument-maker.
49. Nivapaka-seedsman.
50. Ishtakaraka-brick-maker.
51. Dadhimodakara-cheese-maker.
52. Malakara-gardener.
53. Changerika-vikrayi-seller of wood-sorrel.
54. Mansopajivi-flesher.
55. Pattikavapaka-planter of the Lodh tree.
56. Churnopjivi-seller of powders.
57. Karpasika-cotton-dealer.
58. Dhanushkara-maker of bows.
59. Sutravikrayi-thread-seller.
60. Shastrakarmakrita-armourer.
61. Kandakara-leaf-seller.
62. Tambulika-betelnut-seller.

63. Chitrambhajanti-draftsman.
64. Charmakara-curier.
65. Lohakara-blacksmith.
66. Shalakashalyakarta-maker of drafts and javelins.
67. Vishaghata-destroyer of poison.
68. Bhutagrahavidhighna-exorcist.
69. Balanamchikitsaka-physician for children.
70. Arakutakrita-brass-founder.
71. Tamrakuta (krit)-copper-founder.
72. Svastikara-maker of figures. (on floors etc.).
73. Keshakara-hair-dresser.
74. Bhaktopasadhaka-boiler (cook).
75. Brishtakara-boiler (cook).
76. Shaktukara-baker.
77. Shadvika-confectioner.
78. Khandakara-dealer in candied sugar.
79. Vanijaka-merchant.
80. Kachakara-cutter of crystal or glass-maker.
81. Chhatrakara-umbrella-maker.
82. Vedhakashodhaka-refiner.
83. Khandasansthapaka-maker of inlaid work.
84. Tamropajivi-coppersmith.
85. Shrenimahattar-chief of a guild.
86. Gramaghoshamahattara-chief of the townherds.

- 87. Shailusha-player.
- 88. Dyutavitsika-dice-player.

2. Classes and Occupational Castes in Manu and Mahabharata.

New castes-classes. There was a definite tendency for new professions that were from time to time developed to be turned into castes : and so, as professions multiplied, castes also increased. "Through the intermixture of castes, through intermarriages among forbidden castes, and through renunciation of these specific duties by (members of the four several) castes that the hybrid ones are born."¹³¹

The *Parashava*. (born of a Brahmin male and a Shudra wife). He should serve the persons of his father's race. Adopting all the means in his power he should uphold the burthens of his family. Even if he happens to be elder in age, he should still dutifully serve the other children of his father, who may be younger to him in years, and bestow upon them whatever he may succeed in earning.¹³²

The *Nishada*. Manu takes the Nishadas and Parashavas to be the same. The Nishada according to him is born of a Brahmin father and Shudra mother. But he is said to be the son of the Shudra

father and Kshatriya mother in the Mahabharata. He lives by catching fish.¹³³

The *Ugra*. Sons begotten by Kshatriyas on their Shudra wives are called Ugars: they are cruel in deeds and temperament.¹³⁴

The *Ambasthas*. Sons begotten by Bramins on their lawfully married Vaishya wives are called Ambasthas; they live by practising medicine.¹³⁵

The *Sutas*. A son begotten by a Kshatriya on a Brahmin woman becomes a Suta by caste. The Sutas work by living as charioteers.¹³⁶ The duties of a Suta, according to the Mahabharata, are all connected with the reciting of enlogies and encomiums of kings and other great men.¹³⁷

The *Magadhas*. Sons begotten by Vaishyas on Kshatriya women are called Magadhas. They live by trading.¹³⁸ The duties assigned to a Vandi or a Magadha are according to the Mahabharata, eloquent recitations or praise.¹³⁹

The *Vaidehakas*. are sons begotten by Vaishyas on Brahmin women: they live by guarding the harems of kings.¹⁴⁰ The duties assigned to them are the charge of bolts and bars for protecting the privacy of women of respectable householders.

The *Ayogavas* are sons begotten by Shudras on Vaishya women. These live by carpentry. ¹⁴¹ Another species of Ayogavas is mentioned. They are begotten by Magadhas on Sairindhri women. Their occupation consists in the making of nets. ¹⁴²

The *Sairindhris* are sons begotten by members of the robber caste on women of the Ayogava caste or by the Magadhas on women outside the pale of all regular castes. The occupation of these is the adornment of the bodies of kings and others. They are well - acquainted with the preparation of unguents, the making of wreathes, and the manufacture of articles used for the decoration of the person. Sometimes they capture birds and beasts. ¹⁴³

The *Maireyakas* are born of the Vaideha fathers and Sairindhri mothers : their occupation consists in the manufacture of wines and spirits. ¹⁴⁴

The *Pukkasa* is begotten by a Nishada on a Shudra woman. Kshallas, Ugras, and Pukkakas live by killing wild beasts or capturing hole - dwelling animals. ¹⁴⁵ The pukkasas are seen to eat the flesh of asses, horses, and elephants. They cover themselves with the garments obtained by stripping human corpses. They are again seen to eat off broken earthenwares. ¹⁴⁶

The *Venas* are begotten by the *Vaidehas* on *Ambastha* women : the curing of leather is the profession of the *Dhigvanas* : and drum - beating etc. is that of the *Venas*. ¹⁴⁷

The *Maitreyas* are begotten by *Vaidehas* on *Ayogava* women : they lavishly sing the eulogies of the king at dawn, and rouse him from sleep by ringing bells (in the morning.) ¹⁴⁸

The *Kaivartas* are begotten by *Nishadas* on *Ayogava* women : they live by working as boatmen. ¹⁴⁹

The *Charmakaras* or cobblers are born of *Karavara* women : and the *Andhras* and *Medas* are begotten by *Vaidehakas* on the *Nishada* women. *Andhras*, *Medas*. etc. live by killing wild beasts. ¹⁵⁰

The *Pandapakas* are born of *Vaidehika* women and *Chandala* fathers. They manufacture bamboo - made articles. ¹⁵¹

The *Sopakas* are born of *pukkasa* women and *chandala* fathers : they live by working as public executioners. ¹⁵²

The *Antyavasayins* are begotten by *chandalas* on *nishada* women : they live by working as attendants at cremation grounds. ¹⁵³

These castes generally live in the forest, or about cremation grounds, or on hill-tops, or underneath the lordly trees. ¹⁵⁴

The Chandalas and Shvapachas (lit. dog-eaters) live at the outskirts of villages : they are not to use any utensils ; dogs and asses being their only wealth. They are to wear the apparels of corpses, eat out of broken pots, wear ornaments of steel and lead a nomadic life. Stamped with the signs of king's permits on their persons, they are to enter the village in the day on business ; and they should remove the corpses of the friendless deceased. It is their business to kill the criminals punished by the king with death, and take the bedding and the wearing apparels of the executed convicts. ¹⁵⁵

IV.

1. Castes and professions in the Buddhist literature.

It is very evident that no hard and fast rule existed as regards the acceptance of professions by a member of a particular caste. It was lawful for the Brahmins to go in for the Kshatriya's duties or the Vaishya's profession in times of trouble.

It was lawful for the Kshatriya to take up agriculture, cattle - rearing, and trade in times of distress. It was lawful for a Shudra to take to the duties of the Vaishya caste in case of necessity. And in fact we are told that a good many Brahmins did accept the professions formally reserved for the third caste. Economically the line of cleavage between the Vaishya and the Shudra tended to break down as both castes should follow the same professions.

But if such was the state of things in Hindu India, it was even more decidedly the case in Buddhist India. Labour was more mobile in the age of the Jatakas and we have abundant references to all types of people taking up all sorts of professions. Of course the main rules were the same; the ideals of respective castes are precisely fixed. "And that is so, O king, just as it is the business of the princes of the earth to learn all about elephants and horses, and chariots, and bows, and rapiers, and documents, and the law of property to carry on the traditions of the Khattiya clans, and to fight themselves, and lead others in war, while husbandry, merchandise, and the care of cattle are the business of other folk, ordinary Vesas and Shuddas :—or just as the business of the Brahmins and their sons is con-

cerned with the Rigveda, the Yajurveda, the Samaveda, the Atharvaveda with the knowledge of lucky marks (on the body), of legends, puranas, lexicography, prosody, phonology, verses, grammar, etymology, astrology, interpretation of omens, and of dreams, and of signs, study of the six Vedangas, of the eclipses of the sun and moon, of the prognostications to be drawn from the flight of comets, the thunderings of the gods, the junctions of planets, the fall of meteors, earthquakes, conflagrations, and signs in the heavens and on the earth, the study of arithmetic, of casuistry, of the interpretation of omens to be drawn by dogs, and deer, and rats, and mixtures of liquids; and the sounds and cries of birds,—while husbandry, merchandise, and the care of cattle are the business of other folk, ordinary Vessās and Suddas.”¹⁵⁶

2. Mobility.

It is a pleasure to learn that in the economic sphere the distinctions between caste and caste were not absolutely rigid. Men could not change their castes freely : but they could to a very great extent determine their professions. All Brahmins were not priests : not all Kshatriyas warriors.

The Brahmins as well as the Kshatriyas were to be found in almost every rank and profession. Here is a striking illustration. "Now Upali's father and mother thought : 'How will Upali after our death live a life of ease and without pain' ? Then Upali's father and mother said to themselves 'if Upali could learn writing, he would after our death live a life of ease and without pain.' But then Upali's father and mother thought again : 'if Upali learns writing, his fingers will become sore. But if Upali will learn arithmetic he would after our death live a life of ease and without pain.' But then Upali's father and mother thought again : 'if Upali learns arithmetic his breast will become diseased (Buddhaghosha : 'He who learns arithmetic, must think much : therefore the breast will become diseased.') But if Upali could learn moneychanging (rupa ; 'He who learns the Rupa Sutta must turn over and over many karshapanas and look at them'); he would after our death live a life of ease and comforts and without pain' But then Upali's father and mother said to themselves : 'If Upali learns money-changing, his eyes will suffer. Now here are the Sakya-puttiya Samanas who keep commodious precepts and live a commodious life ; they have good meals and lie down on beds

protected by the winds. If Upali could be ordained with the Sakyaputtiya Samanas, he would after our death live a life of ease and without pain. ' " 157

Now we hear of a Brahmin carpenter " who gained his livelihood by bringing wood from the forest, and making carts " : 158 a Brahmin hunter who used to go into the forest and " set snares and nets and stakes and kill wild animals, and carrying the flesh on a pole sold it, and so made a livelihood " ; 159 a Brahmin goat-herd who " took a great flock of goats and making a pen in the forest kept them there : he had a smoking fire and lived on milk and the like, tending his goats " ; 160 a Brahmin agriculturist who, after ploughing his fields, "loosened his oxen, and began to work with a spade." 161

In one of the stories we are told that there are ten different kinds of Brahmins :

- (1) " Some carry sacks up on their backs root-filled and fastened tight :

They gather healing herbs, they bathe, and magic spells recite.

These are physician-like, O king, and Brahmins too they hight."

- (2) " Some carry bells and go before,
and as they go they sing,

A chariot they can drive with skill,
 and messages can bring,
 These are like servants, mighty king,
 and Brahmins too they hight."

- (3) " With water-pot and crooked staff
 some run to meet the king
 Through all the towns and villages,
 and as they follow, sing
 In wood or town we never budge,
 until a gift you bring,
 Like tax-men these importunate
 and Brahmins too they hight."

- (4) " Some with long nails and hairy limbs,
 foul teeth and matted hair,
 Covered with dust and dust-begrimmed
 as beggar-men they fare.
 Hewers of wood, O mighty king, and
 Brahmins too they hight."

- (5) " Myrobolan and vilva fruit, rose, apple,
 mangoes ripe,
 The labuj-fruit and plants of wood,
 tooth-brush, and smoking-pipe.
 Sugarcane baskets, honey sweet, and
 ointment, too, O king.
 All these they make their traffic in,
 and many other things.

These are like merchants, O great king,
and Brahmins too they hight."

- (6) "Some follow trade and husbandry,
keep flocks of goats in fold,
They give and take in marriage,
and their daughters sell for gold.

Like Vessa and Ambattha these;
and Brahmins too they hight."

- (7) "Some chaplains fortunes tell or geld
and mark a beast for prey
With preferred food the village folk,
invite them oft to stay.

There kine and bullocks, swine and goats
are slaughtered many a day.

Like butchers base are these
and Brahmins too they hight."

- (8) "Some Brahmins, armed with sword and
shield with battle-axe in hand
Ready to guide a caravan before
the merchants stand

Like herdsmen these or bandits bold
and Brahmins too they hight."

- (9) "Some build them huts and lay them traps
in any woodland place,
Catch fish and tortoises, the hare,
wild cat and lizard chase

Hunters are these, O mighty king,
and Brahmins too they hight. ”

- (10) “ Others for love of gold lie down
beneath the royal bed
At Soma-sacrifice : the kings bathing
bove at their head.
These are like barbers and
Brahmins too they hight. ”¹⁶²

3. Miscellaneous crafts.

Many other condemned professions used to attract a number of Brahmins. A long list of these is given in a Pali book. Incidentally it throws much light on the various crooked ways by which men used to maintain themselves. “ Or, whereas some Samana Brahmins, who live on the food provided by the faithful, continue to gain a livelihood by such low arts, by such lying practices as these ; that is to say by foretelling from marks on the body ; by auguries, by the interpretation of prognostics, of dreams, of omens, good or bad, by divinations from the manner in which cloth and such other things have been bitten by rats ; by sacrifices...by teaching spells for preserving the body, for determining lucky sites, for protecting fields, for luck in war, against

ghosts and goblins, to secure good harvests, to cure snake-bites, to serve as antidotes for poison, and to cure bites of scorpions or rats ; by divination by the flight of hawks, or by the croaking of ravens ; by guessing at length of life, by teaching spells to ward off wounds : and by pretended language of the beasts....by explaining the good and bad points in jewels, sticks, swords, arrows, bows, weapons of war, women, men, youths, maidens, male and female slaves, elephants, horses, bulls, oxen, goats, sheep, fowls, ships, iguanas, long-eared creatures, turtle, and deer...by foretelling future events as these :—‘ there will be a sortie by the king ’ ; ‘ there will not be a sortie by the king ’ ; ‘ the king within the city will attack ’ ; ‘ the king outside the city will retract ; ’ ‘ there will be an eclipse of the moon ’ ; ‘ there will be an eclipse of the sun ’ ; ‘ the sun and the moon will be in conjunction ’ ; ‘ there will be falling meteors, and fiery coruscations in the atmosphere ; ’ ‘ there will be earthquakes, thunder-bolts, and forked lightnings ’ :...and then ‘ the eclipse of the moon will have such and such a result ’...‘ there will be abundant rainfall ’ ; ‘ there will be deficient rainfall ’ ; ‘ there will be an abundant harvest ’ ; ‘ there will be fa-

mine'; 'there will be tranquillity'; 'there will be disturbances:' 'the season will be sickly;' 'the season will be healthy;' or by drawing deeds, making up accounts, giving pills, making verses, or arguing points of casuistry;...or...by giving advice touching the taking in marriage, or the giving in marriage; the forming of alliances or the dissolution of connections; the calling in property, or the leaving of it out; by teaching spells to procure prosperity, or to cause adversity to others; to remove sterility: to produce dumbness, locked-jaw deformity, or deafness; by obtaining oracular responses by the aid of a mirror: or from a young girl, or from a god...by teaching the rituals for making vows and performing them; for blessing fields; for imparting virility or rendering impotent; for choosing the site of a house...by prescribing medicines to produce vomiting or purging, or to remove obstructions in the higher or lower intestines, or to relieve headache; by preparing oils for the ear, collyriums,...antimony and cooling drinks; by practising cauterisation, midwifery, or the use of root decoctions." 163

4. Royal Craftsmen.

There are instances of royal craftsmen, which

clearly illustrate people's belief in dignity of labour. Here is the case of a prince who exhibits himself successively as an image - maker, as a potter, as a basketmaker, as a gardener, as a cook, and yet when all that is known, he does not lose his caste or suffer in dignity. The prince Kusha summoned the chief smith, and giving him a quantity of gold, bade him go, and make a female image. When he was gone, he took more gold and fashioned it into the figure of a woman. This figure was beautiful beyond the power of tongue to tell. And he had robed it in linen and placed in the royal chamber. On seeing the image brought by the chief goldsmith, he found fault with it, and said, 'go and fetch the figure placed in our royal chamber.' The man went into the room and on seeing it, thought, 'this surely must be some heavenly nymph, come to take her pleasure with the prince;' and he said "Sire, standing in your royal chamber is a noble daughter of the gods. I dare not approach her.' He then sent the image to his mother, 'when I find a woman like this I will take her to wife.'

The king . Kusha went to the king's potter and became his apprentice. One day after he had filled the house with potter's clay, he asked if he should make some vessels, and when the potter

answered, ' yes, do so, ' he placed a lump of clay on wheel and turned it. When once it was turned, it went on swiftly till mid - day. After moulding all manners of vessels, great and small, he began moulding one specially for Pabhavati, with various figures on it. The potter went to the palace with various specimens. The king on seeing them asked who had made them, ' I did sire, ' ' I am sure you did not make them. Who did them ? ' ' My apprentice sire. ' ' Not your apprentice, your master rather. Learn your trade from him. Henceforth let him make vessels for my daughters '...

Then he went to a basket - maker who served the king, and became his apprentice. He made a palm-leaf fan for Pabhavati, and on it he depicted a white umbrella (as an emblem of royalty) and taking as his subject a banquet - hall, amongst a variety of other forms he represented a standing figure of Pabhavati. The basket - maker took this and other work, the workmanship of Kusha, to the palace. The king on seeing them, asked who had made them, and just as before presented a thousand pieces of money to the man, saying, ' Give these specimens of wicker work to my daughter. '

In the same way he went to the king's gard-

ener and became his apprentice, and while making all sorts of garlands, he made a special wreath for Pabbhavati, picked out with various figures...

Then he engaged himself as an apprentice to the king's cook. Now one day the cook gave the Bodhisatta a bone of meat to cook it for himself. He prepared it in such a way that the smell of it pervaded the whole city. The king had it brought to him and placed a morsel on the tip of his tongue, and it woke up and thrilled the seven thousand nerves of taste.¹⁶⁴

5. Heredity:

Of course the standing custom was for a man to follow his hereditary profession. Thus we are told that the "Bodhisatta was born in a farmer's family, and when he grew up, he got a livelihood by tillage ;"¹⁶⁵ "the Bodhisatta was born as an elephant - trainer's son, when he grew up, he was carefully taught all that pertains to the training of elephants ;"¹⁶⁶ "the Bodhisatta was born in a village as a potter's son. He plied the potter's trade ;"¹⁶⁷ "the Bodhisatta was born in a musician's family. His name was master Guttilla. When he grew up, he mastered all the branches of

music." ¹⁶⁸ Yet the dignity of labour was sufficiently recognised to allow members of the higher castes to follow the artisans' profession. And the economic lines between professions were not so sharply drawn as those between castes and castes. "A king's son, pure bred, cedes his shares of his kingdom to his sister, turns trader and travels with his caravan. Another noble fleeing from his brother, hires himself to a neighbouring monarch as an archer. A prince, resigning his kingdom, dwells with a merchant on the frontier, working with his hands. A wealthy, pious Brahmin takes to trade to be better able to afford his charitable gifts. Brahmins engaged personally in trading without any such pretext, taking service as archers, as the servants of an archer who had been a weaver, as low - caste trappers and as low - caste carriage-makers." ¹⁶⁹

6. Professions described.

Now we will give the details of most of the professions then existing among the people. This will give us a concrete idea of the economic and social life of the people at that time. The most important economic fact about an individual is the way in which he maintains himself and his family.

and the sort of part he plays in the life of the society. Hence detailed descriptions of the professions which we actually find in the Pali literature, will not be out of place here.

Physicians and Surgeons. There was a doctor who had treated a rich man for the disease of his eyes, but who did not receive any fee for that. He then made a preparation for one of his eyes and blinded him with it.¹⁷⁰ One physician was called upon to cure a snake-bite. The physician said: " Shall I extract the venom with the usual antidotes, or have the snake caught and make it suck the poison out ? " At last the doctor made a fire with the wood, and said to the snake. ' Either you suck the poison out or into the fire you go.' He drew out the poison then with samples and completely cured the man.¹⁷¹ There were clever surgeons who often performed skilful operations. The king Sivi gives as a gift his very eyes ; and a surgeon is brought to take off his eyes. Then the surgeon thought : ' It is not fitting that a skilful surgeon like myself should pierce a king's eyes with the lancet ' ; so he pounded a number of samples, rubbed a blue lotus with the powder, and brushed it over with the right eye ; round rolled the eye and there was great pain. In this way he

took off the eyes.¹⁷² Another king called in a surgeon and had him fitted with a false tip to his nose which was cunningly painted for all the world like a real nose. One doctor had no practice ; so he tries to persuade some boys to seize some snakes, in order that the snake might bite some of these. He thought he would get a patient in that case. But the boys cunningly threw the snakes over him and he dies.¹⁷³ But the most striking illustration of a doctor's practice is the case of Givaka.¹⁷⁴ At one time the Setthi's wife at Saketa had been suffering for seven years from a disease in the head. Many great and world-renowned physicians came, but they could not restore her to health ; they received much gold and went away. Then Givaka Komarabhakka went to the house of that house-holder the Setthi ; and said : Do not give me anything madam beforehand : when you shall have been restored in health, then you may give me what you like. Having carefully observed the symptoms, he asked for one pasata of ghee, and having boiled it up with various drugs, gave it her through the nose. And the butter given through the nose came out through the mouth. And the Setthi's wife spat it out into the spittoon and told the maid servant, ' come my girl, take this ghee with a piece of cotton. ' When she observed the

change of demeanour in Givaka, she said : ' Why are you perplexed, doctor ? ' Givaka said ; ' I thought, it is astonishing how niggardly this housewife is, in that she has this ghee which ought to be thrown away, taken up with a piece of cotton. I have given her many highly precious drugs. What sort of fee will she give me ' ? ' Householders like us, doctor know why to economise thus ; this ghee will do for the servants or workmen to annoint their feet with, or it can be poured into the lamp. Do not be perplexed, doctor, you will not lose your fee. ' Then the Setthi's wife, who had been restored to health, gave him four thousand (Kahapanas) : her son and her daughter-in-law also gave him equal sums; and the Setthi gave him four thousand, and a man servant, and a maid servant, and a coach with horses.

At that time the Magadha King Seriya Bimbisara suffered from a fistula ; his garments were stained with blood. When the queens saw that, they ridiculed the king and said, " His Majesty is having his courses ; His Majesty will bring forth. ' The king was annoyed at that. Then Givaka was called and he healed the fistula of the king by one annointing. Then the Magadha king ordered his five hundred wives to put on all their ornaments : then

he ordered them to take their ornaments off and to make a heap of them, and he said to Givaka : 'all these ornaments shall be thine.' 'Nay, sire, may your Majesty remember my office.'

At that time the Setthi at Rajagaha had been suffering for seven years from a disease in the head. Some of the physicians said : 'the Setthi, the householder will die on the 5th day.' Other physicians said : 'the Setthi, the householder, will die on the seventh day.' Now a certain Rajagaha merchant thought : 'This Setthi has done good service both to the king and the merchants' guild. What if we were to ask the king for his physician Givaka to cure the Setthi ?' Accordingly, Givaka being called observed the symptoms carefully and said : 'If I restore you to health, what fee will you give me ?' 'All that I possess shall be yours doctor, and I will be your slave'. Then Givaka ordered the Setthi to lie down on his bed, cut through the skin of the head, drew apart the flesh on each side of the incision, pulled two worms out (of the wound), and showed them to the people, " see, sirs, these two worms, a small and a big one. The doctors who said 'on the fifth day, the Setthi will die ' have seen this big worm, and how it would penetrate on the fifth day to the brain of the Setthi. And the

doctors who said, ' on the seventh day, the Setthi will die ' have seen this small worm." He then closed up the sides of the wound, stiched up the skin on the head, and annointed it with salve. After twenty days, the Setthi recovered. Givaka then received one hundred thousand Kahapanas from him, and asked him to pay an equal sum to the king.

Here is another example of the medical and surgical skill of the doctors. " Suppose in treating a wound full of matter and blood, in whose grievous hollow the weapon which caused it remained, which stank of putrid flesh, and was made worse by the pain that varied with constantly changing symptoms, by variations in temperature, and by the union of the three humours, windy, bilious, and phlegmatic,—an able physician and surgeon were to annoint it with a rough, sharp, bitter, stinging ointment, to the end that the inflammation should be allayed. And when the inflammation had gone down, and the wound had become swelled, suppose he were then to cut into it with a lancet and burn it with caustic. And when he had cauterized it, suppose he were to prescribe an alkaline wash, and annoint it with some drug to the end that the wound might heal

up, and the sick man recover his health, now tell me, O king, would it be out of cruelty that the surgeon thus smeared with ointment, and cut it with the lancet, and cauterized with the stick of caustic, and administered a salty wash ? ”¹⁷⁵

In the Mahabharata also we are told that the surgeons were requisitioned in large numbers at the time of the war. “ And there were assembled hundreds upon hundreds of skilled mechanics in receipt of regular wages and surgeons and physicians well-versed in their own science, and furnished with every ingredient they might need. ”¹⁷⁶

Architects. The profession of architecture embraced all work in wood as well as in stone. Many architects were specially employed in the construction of new cities. “ Just, O king, as the architect of a city, when he wants to build one, first clears the site of the town, and then proceeds to get rid of all the stumps and thorny brakes, and thus make it level, and only then does he lay out the streets and squares, and cross roads, and market places, and so build the city ; just so, does the recluse develop in himself the five moral powers and so on, by means of virtue,

on the basis of virtue."¹⁷⁷ The Great Being once sent for a master-carpenter and gave him the money, telling him to build a hall in that place. He took the money and levelled the ground, and cut posts and spread out the measuring line.¹⁷⁸ It is also interesting to note how these workers used to go to the forest for the collection of suitable types of wood. Once upon a time, we are told, there was a village of carpenters not far from the city, in which five hundred carpenters lived. They would go up the river in a vessel, and enter the forest, where they would shape beams and planks for housebuilding, and put together the frame-work of one-storey, or two-storey houses, numbering all the pieces from main post or onwards; these then they brought down on the river bank, and put them all aboard; then running down the stream again, they would build houses to order as it was required of them; after which they received their wage and went back for more materials, and in this way they made their livelihood.¹⁷⁹ One king took a fancy to the construction of a place supported by one column and instructed his architects accordingly. They went to the forest and found out some trees worthy to be the single column of such a